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# PSYCHOSOMATIC MEDICINE

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EXPERIMENTAL AND  
CLINICAL STUDIES

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REVIEWS OF PERIODICAL LITERATURE  
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PUBLISHED QUARTERLY WITH THE SPONSORSHIP OF

THE COMMITTEE ON PROBLEMS OF NEUROTIC BEHAVIOR  
DIVISION OF ANTHROPOLOGY AND PSYCHOLOGY

NATIONAL RESEARCH COUNCIL

## PSYCHOSOMATIC MEDICINE EXPERIMENTAL AND CLINICAL STUDIES

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## ANOREXIA NERVOSA: A PSYCHOSOMATIC ENTITY\*

JOHN V. WALLER, M.D., M. RALPH KAUFMAN, M.D.,  
AND FELIX DEUTSCH, M.D.\*\*

THE CLINICAL SYNDROME known as anorexia nervosa has had an interesting nosological history. Interpretation of the etiological factors has varied from time to time, swinging from a psychological interpretation of the syndrome to an organic; it has been closely related to Simmonds' cachexia. More recently the emphasis has been placed upon the neurotic origin of the syndrome and we are in thorough agreement with this latter view. In addition, we believe there is a specific train of psychological events leading to the development and expression of this neurosis. The literature has been thoroughly and competently reviewed on a number of occasions and therefore will not be discussed in detail here.

One of the earliest references to "consumption of mental origin" was made by Richard Morton in 1694 (8). In his classical paper in 1874 (6), Sir William Gull discussed anorexia nervosa and reported another case in 1888 (5), stating, "these patients without apparent cause evince a repugnance for food," "a perversion of the ego being the cause." Already in 1868 (4) he had maintained that certain cases of amenorrhea "may be the result of an intellectual disturbance." Sir Samuel Gee, in 1907 (3), stated that after the return of appetite and gain in weight, "it may happen that the marasmus, constipation, amenorrhea and melancholy

continue; a manifest proof that the disease is not the result of the anorexia." Other authors, amongst whom the most recent is Richardson (10), report clinical observations and theoretical discussions of this problem. Richardson particularly presents an excellent review of the literature, bringing out the development of the two viewpoints and emphasizing that the endocrinological approach was an "over-specialization" in which the patient was lost sight of. He presents his cases in chronological order of the development of the individual clinical course and through late developments in each case convincingly demonstrates the primary importance of the neurosis and the absence of, or secondary importance of, pathology related to the endocrine glands. On the whole, the modern point of view seems definitely inclined towards the psychogenesis of the clinical syndrome.

The generally accepted clinical syndrome of anorexia nervosa occurs in girls between the ages of 12 and 21 years, but may occasionally appear in the thirties and forties and is also reported to occur in young men. It consists of the following symptoms: First there is a complaint of loss of appetite, which, on closer examination, turns out to be a reaction of disgust towards food rather than a mere loss of appetite. This is followed by loss of weight, marasmus, or cachexia, complaints of constipation, exhaustion, weakness and irritability, and, in women, is always associated with amenorrhea of varying duration. During the course of the ema-

\* This study has been aided by a grant from the Josiah Macy, Jr., Foundation.

\*\* From the Medical Research Laboratories and the Psychiatric Clinic, Beth Israel Hospital, and the Department of Medicine, Harvard Medical School, Boston.

ciation the skin texture may change; there is an apparent increase of hair over the body and there may be a loss of hair from the head. The secondary symptoms of cachexia are present. A point emphasized by some writers is that the degree of exhaustion is not so great as one would be led to expect by the amount of emaciation. There may be some mood changes.

On analysis of the syndrome there are three symptoms which stand out and which may at first sight be taken as primary: the reaction to food, the constipation, and the amenorrhea.

This, then, represents the somatic picture of the disease. The neurotic etiology has received but scant attention. Histories of the many cases reported in the literature, if they make any mention of the psychopathology, limit this phase to a brief description of the circumstance surrounding the precipitation of the clinical syndrome. Attempts to define the conflict situation have been made by Richardson (10), who maintained that the conflict centering around the relationship to the mother was important and Farquharson and Hyland (2), who note "a fundamental failure of adaptation to the domestic situation." Further analysis of the literature reveals an amazing similarity in all the reported psychological circumstances. These may be grouped and then analyzed as follows:

1) There is an open conflict between the family and the patient. This is particularly true of the mother-daughter relationship. In a case reported by Stephens (11) as early as 1895, the fatal exacerbation of the anorexia followed upon the mother's resumption of frequent visits to her hospitalized daughter.

2) There is often a preceding history of obesity and overeating; this excessive eating may alternate with the anorexia. A very frequent history is that

the patient was ashamed of being fat and then dieted until the cachectic stage appeared.

3) Peculiarities in the sphere of sex are characteristic: in the girl or woman, amenorrhea; in the male, impotence; in both, absence of sexual desire. The catamenial history may show all kinds of irregularities, but amenorrhea during the cachexia is universal.

4) The obesity and amenorrhea occur early in puberty at a time of attempted adjustment to the outside environment.

5) The anorexia, with the full blown clinical syndrome, appears at a somewhat later period, when adjustments of immense psychological significance must be faced. These include leaving the family circle for college or boarding school, or, most often, a proposed marriage.

6) Parental pressure in the attempted solution of these problems adds further fuel to the perpetual internecine warfare.

7) Family history of neurosis or psychosis is encountered frequently. The peculiarities and characteristics of the older members of the family group will leave their impress on the personalities of the children. In this illness the neurotic behavior most frequently found in the parents takes the form of overemphasis on the question of eating. If the history is taken from the mother, the patient is usually described as "always a finicky eater." If the history is taken from the patient, the mother is described as "oversolicitous and overbearing," particularly as regards matters of eating.

8) The secondary gains of the neurosis are frequently at a conscious level and the patient admits the desire for attention and sympathy and the attempt to divert the family notice from a supposedly more popular older or younger sibling.

This remarkable, oft repeated pattern of emphasis on food, alternate over- and undereating, conflict with the family and then precipitation of the syndrome of cachexia with apparent anorexia at the time of adjustment to adulthood, involving new ties outside of the family circle, and then regression to an infantile level, with loss of conscious sexuality, has led us to investigate the underlying psychopathology. A discussion of the psychological setting of the symptoms will lead to a detailed formulation.

The biological significance of food intake needs no elaborate discussion. However, what is often overlooked is that this need, having an original physiological basis, becomes intimately related with psychological factors and may assume a symbolic significance which has no primary relation to the problem of survival.

The infant, being totally dependent for the gratification of its needs upon the external world, soon develops psychological relationships to the individuals ministering to its needs, particularly the parents. The intake of food, or its rejection, assumes a significance in the expression of various emotional factors, and the infant uses the acceptance or rejection of the feeding to express varying emotional patterns. Frustration may lead to hostilities which are expressed in the rejection of food. Many of the feeding problems in infancy are understood when looked at from this point of view. Overemphasis on feeding by the parent or nurse may also create certain psychological patterns. Rejection of food, retention of food in the mouth, vomiting, all may express an attempt at a solution of a conflict with the environment. This is also true in relation to the function of evacuation; diarrhea, constipation and enuresis of childhood may serve psychologically to express certain conflict

solutions. With the growth of the child, intake of food may assume even more elaborate symbolizations related not only to aggressive patterns of behavior, but also to patterns of sexual significance.

The comparison between psychological mechanisms seen in primitives and those seen in children has often been pointed out, and many authors, particularly in the field of psychiatry, have discussed these relationships. Amongst the myths of primitives are those dealing with magical forms of impregnation and birth. An excellent study was published by Hartland in 1909 (7) in which he cited numerous examples of such beliefs. For instance, Heitsi-eibib, a divine ancestor of the Hottentots, was born because a girl swallowed the sap of grass. Yehl, a quasi-divine hero of British-Columbia tribes, was born many times. He transformed himself in turn into a spear of cedar grass, a pebble, a drop of water, and was swallowed by the future mother. The Pueblo people of southwestern North America believed that their culture hero was born of a virgin who became pregnant from eating two pinon-nuts. This magical belief of pregnancy through eating is a very common fantasy in children and may continue unchanged, either consciously or unconsciously, throughout life. If one studies the concepts of children in relation to the origin of babies, one frequently comes across just such theories. Without entering into a detailed discussion of the psychological reasons for the acceptance and elaboration of such theories, one may state that they have a certain universality.

During the development of the child, certain emotional attitudes and relationships develop towards the parents. Under the pressure of training and education, there is a tendency to taboo natural biological expressions. This is particularly true in the sphere of sexu-



ality and, for various reasons, the genital aspect of procreation is repressed. The curious child, however, is constantly seeking an answer to the question of where babies come from. Often the answer is couched in terms of just such symbolization as that seen in the primitives. One has a baby by eating. In some of those children in whom feeding problems are of special significance, this then becomes an added factor. The fantasies centering around this problem are usually within the sphere of those things which the child is forbidden, implicitly and explicitly, to talk about. They may be repressed, but they retain their dynamic significance for the individual. These fantasies of oral impregnation are not necessarily confined to one or the other sex, but play an important rôle in the birth theories of all children.

There are certain crucial age periods in the development of all individuals. According to one school of psychology, the analytic, around the age of six there is a repression of certain conflicts centering around the family constellation; a satisfactory or unsatisfactory solution of the family conflict will color the future development accordingly. With the appearance of puberty, initiated perhaps by an upsurge based on endocrinological factors, there is certainly a need for a psychological reorientation and these older patterns of thought and behavior tend to recur. There is a need for a new adjustment during this period of great internal and external stress; old family rivalries and hostilities are revived. The girl, with the onset of the menses, enters upon her biological womanhood. In the normal development of the individual the adolescent identifies, in whole or in part, with the parent of the same sex. There is a choice of many love objects outside of the family circle. New pressures are exerted by the environment.

The normal girl weathers the puberty storm and develops into a non-neurotic woman. However, the person in whom certain neurotic patterns of behavior have been laid down in childhood has a tendency to regress to these same patterns in an attempt to solve the new conflicts which have arisen. Fantasies concerning sexuality recur with added intensity and the problem of child-bearing recurs. The neurotic, who is tied with inextricable bonds to the family pattern again revives all the older conflicts and fantasies, among which may be those of impregnation through the gastrointestinal tract. To such an individual, then, the whole concept of sexuality and procreation is at this more primitive level. Activity centering around the mouth has not only the reality value of eating, but also a symbolic sexual significance centering particularly around ideas of procreation. The sexual function of the genitalia may be denied and a rather characteristic personality reaction occurs. All fantasies or activities connected with genitality are reacted to with guilt, disgust, or anxiety. Particularly at this time the auto-erotic activity which is a recrudescence from childhood assumes great significance and is frequently reacted to with intense guilt. The fantasies associated with this auto-erotic activity may be at a conscious level. Unconsciously the mouth and eating may play an important rôle. As in childhood, this adolescent uses eating or not eating also to express hostilities and aggressions to the family circle.

What is the result of these conflicting forces and the rather specific fantasy formations? The act of eating is now symbolically equated with sexuality, particularly with the fantasy of impregnation. Dependent on the quantity of guilt and anxiety associated with the fantasy of pregnancy and with aggress-

sions within the family, there may be a complete rejection of eating which is understandable then only in terms of its symbolic significance and not of its original biological function. Now we can understand why there is more than a mere loss of appetite and actually a feeling of disgust. The obverse of this rejection of food is seen very frequently in a sort of compulsive ritualistic gluttony. With the shifting in the dynamics of the neurotic conflict, the gratification of these fantasies takes place at an unconscious level and the patient periodically indulges in an orgy of compulsive eating. Thus gratification of the fantasy of becoming pregnant may be expressed by overeating or gorging. When, however, guilt or anxiety arises in relation to this gratification, rejection of food ensues. The compulsive character structure of these individuals is further shown by many of the secondary symptoms. A characteristic finding of increased fluid intake serves the purpose of an obsessive ritual which serves the purpose of a cleansing and purification rite. This aspect of the syndrome will be demonstrated in the cases we are to report. In some instances this purification rite is not confined to fluid intake, but may show itself in an obsessive need for cleanliness, with an exaggerated handwashing, house-cleaning, and neatness. These psychopathological manifestations are important in throwing light upon the level at which part of the conflict occurs. In the frank obsessional neurosis one frequently meets with such behavior.

As a correlate to the symbolic impregnation, one may perhaps understand the two other so-called primary symptoms in the syndrome: constipation and amenorrhea. Concomitant with the fantasies of oral impregnation goes the fantasy of a child in the abdomen. Here again one might cite many primitive beliefs. Constipation

then becomes equated with the pregnant abdomen. This is rather clearly shown in the cases which we shall present. Again depending upon shifting factors of the structure of the neurosis, this constipation may alternate with diarrhea.

Following this line of thought, one may fit into the picture the amenorrhea. It is common knowledge that the menstrual cycle is profoundly influenced by purely psychological factors. The frequent temporary cessation of the menses in young women who fear pregnancy and also the menstrual irregularities which often occur the first few months of married life are in support of this concept. The relationship of menstruation to pregnancy is well known in our western civilization. The syndrome, schematically reconstructed, represents a symbolic wish to be impregnated; eating is a denial of the wish, and an acting out at an unconscious level of this fantasy. Naturally the significance of these factors varies with each individual and the quantitative inter-relationship can be understood only on the basis of an intensive study of each case.

It seems that in the patients who develop anorexia nervosa the mother relationship plays a rather specific and significant rôle. The conflict between the mother and the child usually centers around the problem of food. Either the mother constantly overemphasizes the act of feeding or centers her disciplinary measures around this function. It may perhaps be significant that the mother's own psychological structure, to a certain extent, is evolved around her own relationship to food. This is a point which is of importance not only in relation to this specific problem, but to another and more general problem, the so-called inheritances of family characteristics. Perhaps what appears here is not an inherent or a con-



stitutional trait, but rather the projection of a pattern in the parent onto the child. The conflict with the mother may often reach a great intensity and all the factors that enter into this relationship are not clear. The relationship to the father fits into the dynamics of the pattern of personality organization of the patient.

We have attempted in our discussion to demonstrate that the psychological factors which determine the etiology of the anorexia nervosa syndrome are not to be couched in general terms. We believe it is not sufficient to state that psychological conflicts and emotional factors enter into the picture, but rather that these psychological factors have a certain specific constellation centering around the symbolization of pregnancy fantasies involving the gastrointestinal tract.

#### CASE I

The patient (P.D.), a 19-year-old girl of Italian extraction, entered the hospital, complaining of loss of appetite, loss of weight and weakness of nine-months' duration. The history of her present illness, as it appeared in the house record, was as follows: The patient was well, weighing 120 lbs., until one year before admission. She had started to work in a candy factory and ate candy all day long; she stated that she therefore was no longer able to eat regular meals. After four months the loss of weight and weakness were so great as to necessitate a change in occupation. Despite the elimination of eating between meals, the weight loss and inability to eat continued. An occasional regular meal caused epigastric and abdominal distress, with flatulence and bloating. There was belching, but no vomiting or nausea. For several years preceding the onset of the illness the patient was constipated and resorted to frequent catharsis.

The menses were regular until one year previously, when they became irregular and scanty. For the six months preceding admission to the hospital there had been no menstrual flow.

Physical examination revealed a poorly nourished girl who appeared to have no distress. Except for evidence of recent loss of weight, the physical examination, including x-rays of the chest, was entirely normal. Her weight on admission was 80½ pounds. During her hospital stay it went down to 79½ and then up to 81 pounds. The final clinical diagnosis of the ward service was anorexia nervosa.

The patient was subsequently studied more intensively and the following data were elicited: The patient was the only girl, the third of four siblings, whose three brothers were alive and well. The father was 48 and the mother 47 years of age. The patient had influenza in infancy and measles during early childhood. At the age of ten she had a tonsillectomy and at 15, an appendectomy. There had been no other physical illness.

Since earliest childhood there had been an emphasis, particularly on the part of the mother, who was rather stout, on the problem of eating. The mother stated that when the patient was one year old she gave her some peanuts and the patient choked. The mother has frequently told the daughter of this incident and has emphasized it a great deal in relation to eating, always cautioning her that she should be careful as to what she ate. The patient has shown a marked resentment against the mother, particularly because she had to eat everything that came to the table, with no allowance for personal preferences.

Partly because she was the only girl in the family she was always treated as the baby and shown special consideration by her parents and brothers. The father, a cobbler by occupation, to a certain extent emphasized this rule. The patient herself stated that she was aware throughout her life of being brought up in a manner entirely different from the American girls of her neighborhood; the mother's insistence on discipline caused a good deal of friction and resentment on the part of the patient. The father to a great extent supported the patient in her quarrels with the mother, except in one aspect, and that was in relation to sexual behavior. The family, including the two older brothers, paid a good deal of attention to her moral upbringing.

She was not allowed to play in the street with her classmates and, as she grew older, strict rules as to her relationship with boys were set up by her parents. She stated that her only information on sex was gathered from schoolmates and an occasional book. She thought that pregnancy was simply a natural outcome of marriage.

At the age of 12 her menses appeared and about this time a desire for male companionship became manifest. It was during this time that the first evidence of compulsive eating became manifest. When she was eating large quantities of candy, she would become bloated and have nausea. She was puzzled, but did not tell her mother. Since her mother had warned her not to eat candy, she dared neither to comment to her on her observation, nor to ask whether she was correct in believing that a baby was growing in her stomach. She said in an interview, "Whenever I was alone, I had to look at my stomach to see if it was not too big." She ate everything, to a point where she became distended, and, as she stated during the interviews, she felt many times "as if she were pregnant." During this period she was not allowed to have anything to do with boys. Her entire life was guided by the mother who took her to school in the morning and called for her in the afternoon. On arrival home, she did the housework because she thought her mother was not sufficiently neat. During this period the patient was very obedient and it was not until she had entered High School that there occurred any conscious thoughts of disobeying her parents. The patient described herself as being very sensitive and ambitious, interested in obtaining an education and always trying to be an American and hence having certain ideas about life which her immigrant parents did not share.

At the age of 15 she met her first boy friend and was sexually thrilled by his kisses and embraces. At this time she again had frequent episodes of compulsive eating, particularly in the afternoon. But it was not an urge like hunger. She merely kept on eating, apples, cake, etc., to the point of extreme discomfort and abdominal distention. She became more and more worried, afraid lest she might be pregnant. She

lay down for hours, in order to listen to the movements and noises in her stomach, first indulging in eating and then waiting for something to happen. "How and from where could the baby come," she thought fearfully. Soon after meeting this boy the patient stopped overeating. Meetings were surreptitious and on several occasions were discovered by the father who lectured the patient severely. The thrill of sexual contact soon wore off and the patient became depressed after any sexual experience. She went with this boy for a year without telling her parents. When she finally did tell them the mother raised no objections, but the father disliked the boy and tried to break off the relationship. It was of interest that although the father at first objected to this relationship, once he accepted the boy, he wanted the patient to marry. The mother, however, discouraged any thought of marriage. During this period the patient relieved her sexual tension through masturbation which was accompanied by a great deal of guilt. The emphasis on cleanliness and neatness became exaggerated during this period.

Owing to financial conditions, the family had to move to a suburban town, which meant that the patient could not now enter college without the payment of a prohibitive tuition. She resented this a great deal and blamed her parents, especially because they did not agree to allow her fiancé to pay for her education. At the age of 18 she began to work in a candy factory and at the same time her mother again made strenuous objections to the proposed engagement. An overwhelming desire to eat candy while at work, now appeared and the patient could no longer eat any other food, the sight of which caused repulsion and nausea. At this time her amenorrhea occurred and the patient lost all sexual desire and excitability. She also became markedly constipated and gave this as another reason for her distaste for food. During this period of reduced food intake, the family, particularly the mother and brothers, attempted to force the patient to eat and this resulted in a constant series of arguments and a further limitation of her food intake. The constant emphasis upon eating grew so marked that the family

checked on all the food she ate and the older brother complained at one time that she did not drink enough milk, since he had counted only 15 glasses of milk during the preceding month.

Various factors interfered with marriage plans. The fiancé was a rather passive type of individual, very much attached to his own mother, was constantly running into financial difficulties because he had to support her and because of various other expenditures. The patient's mother, on the other hand, constantly objected to the proposed marriage. The patient, too, found various excuses for putting off the marriage. The real reason for this, as she stated, was that her amenorrhea had to clear up, since she felt that there was no possibility of having children as long as she suffered from amenorrhea. In addition, she feared her own reaction to sex, although she had previously stated that she took for granted that the sexual part of life would come with marriage, and that she and her fiancé did not look forward particularly to this aspect of married life.

Although distinctly discomfited by her illness, the patient recognized certain gains from it. She was now the center of attention of the whole family group which gratified her wish to be babied and, also, relieved her jealousy of her brother, who being three years younger, had received a good deal of attention when he was an infant. She was jealous and objected very strenuously to her father's attention to her mother. She thought the world would be a better place to live in if she and her father were the only people in it.

Quite early in life, antagonism to the mother became quite conscious, especially since the mother had begun to live the patient's life for her and to interfere with her activities. Later during the course of the interviews the patient one day complained of continuous nausea and occasional upper abdominal pain of four-days' duration. The pain was similar in nature to the distress caused by overeating at the age of 14, although the present episode was not related to overeating. It started with nausea after there had been a quarrel with the mother about the date of the proposed

marriage. The mother wished her to postpone it again for a few more months. The patient insisted that, in spite of her fears about sexual intercourse, she was planning to get married as soon as possible in order to break away from the mother and planned under any circumstances, not to live near the mother after her marriage.

During another recent interview, the patient stated that she had had diarrhea for four days and that this was the first time in some years that she had not been constipated. She felt slight bilateral breast pain which, previous to the present illness, was always associated with premenstrual periods, and felt hopeful because of this sign. The day before the interview for the first time since the onset of the present illness, she was sexually excited for the whole day while she was in the company of her fiancé. That evening at supper time she had a return of her old anorexia, accompanied by the same feeling that she could not eat.

Briefly, then, the patient was a 19-year-old girl of foreign extraction in whom the relationship to eating had been constantly stressed throughout her life. With an episode in infancy which was constantly emphasized, her eating represented an actual danger to her. The onset of puberty and an interest in male companionship which ran counter to the wishes of the family marked the beginning of a compulsive eating ritual associated with fantasies of oral impregnation. Compulsive eating and emphasis upon cleanliness recurred, more directly, in connection with an attempt to make a heterosexual adjustment accompanied by direct sexual stimulation and auto-erotic activity and, also, under pressure of a paternal censure. This was followed by marked anorexia, constipation, amenorrhea and loss of conscious sexual desire, as well as marked weight reduction. The parental and sibling reactions were motivated not only by the supposed interest in the patient but also by their own emotional problems.

Since discharge from the hospital the patient has gained some weight, but has had no return of her menses. Her present weight is 90½ pounds. After the brief psychiatric investigation the patient stated



that she felt much better, particularly as to her relationship with her family. Quarrels are few, as the patient definitely avoids them. She is biding her time until marriage brings geographical separation from her family. Since the patient has not achieved insight into the fundamental nature of the family conflict, it is likely that new situations, such as actual marriage or pregnancy will cause reprecipitation of the now partially suppressed clinical syndrome of anorexia nervosa.

#### CASE 2

(*The associative anamnesis of this case has been published by F.D., 1*). The patient (E.G.) was a 19-year-old salesgirl, born in this country of European parents. Her chief complaint on admission was loss of weight. Her weight had dropped from 118 to 87½ pounds. One year previously the patient weighed 118 pounds and at that time began to eat compulsively all sorts of pastries and sweets. After a gain of 20 pounds she consulted a physician because of being overweight. The basal metabolic rate was -28; thyroid medication was prescribed and, in addition, she restricted her diet voluntarily during this period. After the loss of 24 pounds, the basal metabolic rate still being -28, thyroid therapy was discontinued. However, the patient could not eat. She complained of loss of appetite and a great aversion to food. She ceased eating and noticed that she drank a great deal of water, perhaps 16 glasses a day. This was not because of thirst, but because she had to do something to keep things out of her mind. The previous period of compulsive eating and gain in weight had also not been attended by hunger, but "to keep things away from my mind." At the time of admission her weight was 87½ pounds. She gave a history of constipation dating back to her childhood and this she gave as one of the reasons for the lack of appetite. She complained of weakness and irritability, with an intensification of quarreling with her parents.

At the age of 15, since her menses had not yet appeared, oral endocrine therapy was resorted to and was followed by two scanty periods, one month apart. A year

later this medication was repeated and another scanty flow resulted. Since that time she had had no menses. Related to her large fluid intake was frequent and copious urination.

Physical examination revealed an emaciated girl who appeared alert and intelligent and gave no evidence of distress. She was heavily made up, with rouged cheeks and lips and penciled eyebrows. Her breasts were well developed in spite of evidence of the recent extreme loss of weight. There was a marked hirsutism over the whole body, particularly of the arms and legs, which the patient attributed to the use of a depilatory. A thorough physical examination, including x-rays of the skull and chest and laboratory tests, was completely normal. There was no evidence of hyperthyroidism. The final diagnoses on the medical service were question of Simmonds' disease, diabetes insipidus or anorexia nervosa.

Investigation revealed the following history: The patient was the eldest of three siblings, having two younger brothers. The mother was described as a somewhat obese, domineering woman, who forcefully managed the household and attempted to direct every move of her three children. The father was a somewhat passive tailor, given to frequent outbursts of temper. The family life was marked by strife and internal jealousies. There was a great deal of stress placed upon eating, especially by the mother, who provided special delicacies for the capricious palates of each of her children. She would follow the patient to school and there physically enforce the ingestion of the remainder of an unfinished breakfast. Later, when the patient began to put on weight, the mother constantly quarreled with her in an attempt to limit forcibly her food intake.

Some of the memories elicited during the interviews were of a type that one ordinarily has great difficulty in uncovering, but, as is sometimes characteristic in compulsive neurotic individuals, experiences which ordinarily are forgotten remain in the consciousness, although the related emotion may be displaced or repressed. In this connection the patient stated that she remembered, as a child of three, the birth

of her first brother, which evoked marked and open hostility and a desire to replace him at the mother's breast. She remembered also that at this time she had ideas of running away with her father. At the age of six, she thought that kissing was directly responsible for pregnancy. At this time she played "kissing" with another girl and a brother and sister of her own age. Between the ages of six and eight, she slept with her brother who was four years her junior. During the night, she would go to the kitchen, take food from the ice-box, and bring it to her brother. They would then eat it together. From this time she dates her belief that eating was a causative factor in pregnancy, that from eating one got fat, and, finally, had a child. However, she thought this could only take place when people were married. Until the age of 11, she spent part of each night in her parents' bed, in between her father and mother, with the avowed purpose of keeping them apart.

Quarrels and recriminations were the rule, especially between the mother and herself, and there were many reciprocal threats of suicide. As early as her seventh year, the patient remembers standing on the sill of a window threatening to her mother that she would jump out. Death wishes against the mother were quite conscious and recurred frequently. The mother reacted to these quarrels with outbursts of crying and loss of appetite. The patient remembered frequent sexual activity, consisting of masturbation and genital play with children of both sexes, from an early period of life. These ceased abruptly when the patient became overwhelmed with a sense of guilt. The sexual activity was divorced from any knowledge of procreation, since the patient believed that procreation and pregnancy were, specifically and exclusively, brought about by the acts of kissing and eating. At the age of 12, the patient suddenly became aware of the relation between genital sexuality and pregnancy. A neighbor had told her that intercourse was necessary for pregnancy and that all people practiced it. Until that time, she had thought that a child was a natural result of marriage. Her impression had been

that eating and kissing were in some way directly connected with pregnancy and the thought that her own parents indulged in sexual intercourse disgusted her. This attitude was reflected in her eating habits, either in refusal of, or overindulgence in, food. Sometimes she ate everything in sight, not because she was hungry, but because of an insatiable craving. She would continue to eat until she felt pain in her stomach. Her stomach seemed very heavy and large, as if it were "sticking out." She then waited in fearful tension. She would look at her protruding navel and expect the appearance of a baby. On one occasion when she was distended, she was convinced that she had given birth to a baby boy, although she did not see it afterwards. She merely wondered why her child seemed to have no father. During recent years she had stayed up until two or three o'clock in the morning with the conscious intention of keeping her parents from having sexual intercourse; this behavior had become particularly intensified during the course of her illness. By remaining awake and having recourse to a ritualistic type of drinking, she forced her mother to stay awake with her, usually for the purpose of urging her not to drink so much, to eat, or to go to sleep.

With the persistence of the amenorrhea, the patient began to feel that she was abnormal and that her auto-erotic practices of childhood were responsible for this abnormality. During this adolescent period her attitude toward genital sexuality was further colored by constant maternal admonition that sex was a dirty and vilifying thing. She had a marked interest in boys, however, and indulged particularly in kissing, with a good deal of enjoyment. Tongue kissing always evoked a feeling of repulsion and nausea. During this period of awakening heterosexual interest and fully three years before the formal complaint of overeating, the patient already sporadically showed the signs of compulsive eating and ritual purification. Bouts of eating usually occurred in the afternoon immediately preceding a date with a boy in the evening. She would return from school and eat large quantities of cake,



pastry, and candy to such an extent that her mother began to hide these things. She maintained that this eating was an attempt to overcome a "nervous feeling," evidently anxiety, and she would continue to eat until there was abdominal pain and distention, usually accompanied by fantasies of pregnancy. There was a concomitant marked increase in fluid intake and, at every meal or party, it was noticed that the patient drank three to four times as much fluid as her companions. Her rationalization was that, because of constipation, which had been present since earliest childhood, poisons had accumulated and these would be washed away by the large fluid intake.

At the age of 16 the patient became attached to a boy, two years her senior, whom she described as impulsive and sexually attractive. There were marked parental objections to this boy and the father forbade her to see him, saying, "I would rather see her dead than married to him." The mother, also, forbade their meeting. She, however, would see him surreptitiously and indulged in a good deal of kissing. In spite of parental opposition she continued her relationship for about a year; this resulted in quarrels and vilification, particularly on the part of the father who, at times, attempted to hit her. Gradually the boy drifted away.

With the break-up of this affair there was a definite change in the patient's behavior. She became seclusive, slept late in the morning, and began to eat even more. The increase in weight began shortly after this event. The patient stated that she ate continuously because she felt a need to keep her mouth going and, also, that eating served the purpose of driving thoughts away from her mind. In spite of this, her fantasies continually centered about this boy.

About a year before admission to the hospital, the patient was introduced to a man 11 years her senior, whose economic status was secure. This man was quite settled, reserved, and distinctly unromantic. Her parents were "crazy about him." She, however, disliked him intensely. In spite of this she was forced to go out with

him, although, whenever he touched her, she would shiver with disgust. Finally, some four months after the meeting, they were engaged to be married. One month after the engagement her fiancé attempted sexual intercourse with her in a rather crude way and she reacted with a feeling of nausea which has recurred every time the episode was recalled. After the engagement, the patient's aversion to eating gradually began. This was not so much a lack of appetite as a distinct repulsion to food. Although her parents constantly emphasized the fact that her fiancé "would make such a good husband," she was exceedingly repelled by him, particularly because he reminded her so much of her father. The patient felt that sexual intercourse was unnecessary. After giving up the first boy, she became ashamed of her obesity. Later, when she had lost so much weight, one of the reasons for refusing to eat was a fear of aggravating the constipation and hence causing "piles." This fear was based on the fact that the mother had developed piles when she was pregnant with the patient. Another reason she gave for her illness was the jealousy of her female cousins who had always envied her beauty and social success.

During the last two months the patient quite consciously used her lack of eating to provoke the mother and, also, to test the loyalty of her fiancé. The father was very angry with her because of her loss of weight and, on some occasions, would accuse her of being ugly and like a skeleton; he wished she were dead rather than look the way she did. In the light of her "ugly appearance" the patient frequently wondered how long the fiancé would continue to love her and, if he did continue to love her in spite of her loss of beauty, this would be "true love." On leaving the hospital the patient continued her engagement and made plans to marry.

The alternation between bulimia and anorexia, in the patient's own words, expressing indulgence or refusal of the underlying fantasies or illustrating the interaction of her own and her mother's neuroses, became apparent in some of the interviews. "My mother would say something to me, if she was mad, like, 'I want

you to get out of this house,' or, 'I hate you,' or 'I don't want to see you before my eyes any more.' She said these things because I didn't eat and she got disgusted. She wanted me to gain weight and I was losing. So that is the story. As soon as she would tell me to eat, I used to get so nervous that I couldn't eat."

"She always wanted me to eat, but when I was fat, she didn't want me to eat so much because I ate too much then. She said that I ate too much and was too fat."

"When she was arguing with my father or me, she did not eat herself. She felt disgusted and did not want to eat."

Her reaction to her first boy friend, reflected in her eating habits, was put in the following words:

"I liked him very much. I know that I shouldn't, but I couldn't help it. He liked what I liked and he was crazy about me. He was more emotional. He would give me a push and then take me in his arms and kiss me. Then I wanted to eat all the time. To have something in my mouth, so that I would be occupied, doing something. I did not want to think, so I used to eat. When my mother made me stop going with this boy, I used to eat to keep myself from thinking about him. But it certainly took me a long time and a lot of suffering, because I got so fat. I dreamt I had a child of his. I liked him and had to stop seeing him."

About the present boy friend, to whom she reacted with anorexia, she said, "Now I have another boy friend, a nice boy. I didn't like him at first, although my parents liked him. I went with him because my parents said he was a wonderful person. I went with him on account of them. At the beginning it was terrible. I used to fight with my parents. I used to say I was not in love with him. And they said that I should keep on seeing him. I didn't care for him, I just didn't feel akin to him. He is so quiet, so settled, reserved and sure about his job. He kisses me too and takes me around, but he is different. I don't feel those emotions for him."

"I was a pretty girl, but now I am skinny. Everything changed. My hair was oily and thick and now it is so dry and it is falling

out. Hair on my hands, I never had it like that. And on my body too. I don't eat enough. I don't even care for my boy friend. He was here to see me this afternoon. If it was any other boy, well, I got so homely. He should not kiss me. I used to be pretty, but I kept on losing weight. But he kept on seeing me. He hopes now and my mother hopes too."

Although her appetite and reaction to food improved, other compulsive symptoms remained, particularly the insistence upon a large fluid intake and staying awake late into the night.

It is of interest that in addition to the mother's reaction to quarrels by depression and lack of appetite, the youngest child developed vomiting and abdominal pain whenever the mother insisted on disciplinary measures.

In this patient the fantasies centering around impregnation through eating were present with particular clarity in her consciousness and persisted from her childhood.

In *summary*, the patient was a young woman of 19 years, born in this country of European ancestry, who showed a cycle of compulsive eating with increase of weight, followed by a disgust for food with a marked weight loss, a persistent amenorrhea with only three scanty menstrual periods under endocrine therapy and a history of constipation dating back to childhood. There was also sexual activity, consisting of masturbation and genital play during early childhood, abruptly terminating at the age of eight because of a marked sense of guilt, with a recrudescence during puberty. However, her reaction to genital sexuality was one of disgust and non-acceptance. Sexual theories of procreation centered almost entirely around a fantasy of oral impregnation. Jealousy of her parents' sexual life was well marked and attempts to keep them separated were quite open. The mother's attitude towards the feeding problem, with an obsessive insistence upon eating, went back to the patient's earliest childhood, at which time the act of eating already symbolized impregnation. With the revival of her old neurotic difficulties as represented by her present

illness, these old patterns again played an important rôle in the symptom formation. The present conflicts, which could not be solved normally because of the original unsatisfactory solution of the family problems, caused a regression to childhood, with acting out the old neurotic conflicts. The family constellation, centering around the problems of eating and the gastrointestinal tract, seemed also to play an important part in the choice of the patient's neurosis. The opportunity for a normal heterosexual adjustment by the patient, apparently attempted with her first boy friend, was frustrated by the reactions of her parents, particularly the father. This pressure played a part in driving the patient into an overt neurotic reaction and a revival of old patterns of behavior. It should be noted that the marked conflict and hostility with the mother played an important rôle.

The patient gained weight rapidly while in the hospital and continued to do so, but more slowly, during the first two months of the psychiatric study. During this period she was happier and had fewer quarrels with her family. The engagement to the older man was broken. After this initial improvement the patient began to regress, became seclusive, anxious, fought frequently with both parents, stayed up until five or six o'clock each morning, and began to decrease her none-too-large intake of food. At present the patient is preoccupied with thoughts of intercourse with, and rape by, every male, including her younger brother and uncle, with whom she has recently come in contact. It is felt that no improvement can be hoped for until the patient is given insight and placed in an environment removed from her mother.

#### DISCUSSION

The parallels in the environment and in the fantasy life in both of these female patients is rather striking. In both patients there is a certain relationship to the father characterized by a need for affection and a resultant rivalry with the mother. It is important to note that the fantasy concerning the rôle of

the gastrointestinal tract in the function of procreation is similar. The symbolism of eating as impregnation is quite clear and unambiguous; both patients, in their own words, express this in one way or another. The rivalries and hostilities which occur in the family and outside relationships are channeled into this overt conflict centering around food.

The compulsive, ritualistic behavior seen in both patients is related specifically to deep psychological mechanisms, the nature of which need not be discussed at the moment. One aspect, however, the ritualistic cleansing, is worthy of note. This is expressed by increased fluid intake or frequent washing of hands. The personality structure in both patients follows the lines recognized as compulsive obsessive.

We see, then, a syndrome the main symptoms of which represent an elaboration and acting out in the somatic sphere of a specific type of fantasy. The wish to be impregnated through the mouth which results, at times, in compulsive eating, and at other times, in guilt and consequent rejection of food, the constipation symbolizing the child in the abdomen and the amenorrhea as direct psychological repercussion of pregnancy fantasies. This amenorrhea may also be part of the direct denial of genital sexuality.

The factors previously reported, as analyzed in the introduction, are all present in the two cases presented above, in addition to the similarity of the fantasy life and deep psychological mechanisms. The importance of each of these previously enumerated points varies with the individual under consideration; thus in case 1 the older brother played a large rôle in the acting out of the family neurosis, whereas in the other case the rôle of the mother predominated in the environmental neurosis. Overeating and gluttony pre-



ceded the anorexia in each case and the latter also became manifest in each patient at the time of attempted marital adjustment.

The secondary gain in the neurosis is also quite clear. The illness allowed the patient to obtain affection, to be the center of the family, to work out hostilities, and to provoke the environment to certain acts of punishment which alleviated the guilt.

The problem of the specificity of the syndrome, and the choice of the somatic locus in which the psychosomatic syndrome plays itself out, is a problem which still requires a good deal of investigation. Certain suggestions may be tentatively put forward. *The syndrome involves not a physiological system, but rather a functionally coordinated unit subjectively important to the patient.* In other words it is not the system, but the functions in terms of the patient's fantasies, that is important. The rôle of the fantasy of oral impregnation in our patients is quite clear, with the mouth as the receptive organ of food symbolizing conception, the gastrointestinal tract symbolizing the womb and the cessation of menstruation being associated with pregnancy.

The pressure of the family constellation, with its complementary neurotic conflicts, played an important if not decisive rôle. In our own two patients, one can see clearly another element. With the onset of puberty, the opportunity for a normal heterosexual adjustment, with its usually correlated reduction of frustration and hostility towards the parental figures, was

blocked. As a result of this frustration there was an intensification and revival of old conflicts and old patterns of behavior, so that the neurotic solution, involving regression to a childhood level, became the one of choice under the stress of internal and external circumstances.

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\* This article was published after the final draft of our manuscript was sent to the editors and therefore could not be discussed in the body of the paper. On the basis of observations on 12 patients, the authors emphasize the fact that anorexia nervosa is a neurosis with compulsive obsessive, anxious and depressive features. "The neurosis serves as a protection against the assumption of normal sexual relationships." Instances are cited in which eating symbolizes impregnation and obesity symbolizes pregnancy.

## TOTAL GASTROSPASM

## PSYCHOLOGICAL FACTORS INVOLVED IN ETIOLOGY—CASE REPORT

EMIL GRANET, M.D.\*

## INTRODUCTION

IN THE ABSENCE OF DEMONSTRABLE ORGANIC DISEASE, subjective gastrointestinal symptoms are usually ascribed to functional causes. So applied the term "functional" indicates a disturbance of the normal motor and secretory function of a gastrointestinal viscus. In many instances, "functional" merely masks our ignorance as to the specific cause of symptoms. Patients' complaints are still commonly dismissed by the busy practitioner with, "Your trouble is due to nerves," or, "You are imagining these symptoms." The usual advice is to forget about them. The more erudite recognize their ignorance as is shown by increasing interest in psychosomatic investigations directed toward understanding the cause of functional gastrointestinal symptoms.

The influence of the autonomic nervous system on the motor and secretory mechanism of the gastrointestinal tract has been somewhat clarified in recent years by the correlation of the work of anatomists, physiologists, pharmacologists, and surgeons (8, 2). Eppinger and Hess (6) attempted to explain functional gastrointestinal disorders as an autonomic-system imbalance between the vagus and sympathetic systems. We know now that numerous functions controlled by these systems cannot be clearly defined by physiological methods, with the result that the concept of vagotonia and sympathectonia have recently faded in importance.

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Somatic symptoms such as nausea, vomiting, constipation, and diarrhea are commonly instituted by conscious psychological disturbances such as violent anger, fear, and terror, and are obviously due to disturbances in the mechanics of normal gastrointestinal function. Important observations in this field have been made by Cannon (4) and Alvarez (3). Probing deeper into the subconscious in attempts to elucidate the influence of the psyche on gastrointestinal symptoms are the psychoanalytic investigators, notably Alexander and his coworkers at the Chicago Institute of Psychoanalysis (1). The case here reported warrants presentation for two reasons. First, roentgenograms of total gastrosplasm are rarely seen. Secondly, from the clinical aspect, this patient presents psychological data which simulate closely the emotional patterns which the analysts, notably Alexander, believe are important factors in the etiology of gastric dysfunction.

## CASE REPORT

P. M., female, aged 40, divorcée, merchandizing executive, generally in good health, a complete physical examination of recent date revealed no significant abnormalities. No previous gastrointestinal complaints. The evening before examination, patient arrived home in great nervous distress. She complained of a pressure localized in the epigastrium. This was accompanied by nausea and a desire to belch, which latter was induced through the mechanism of air swallowing. Bicarbonate of soda, heat to the abdomen, and enemata failed to relieve her symptoms. After re-





FIG. 1. Total gastropasm immediately after ingestion of barium. Subjective symptom—epigastric pain.

tiring, pressure in the epigastrium changed its character, gradually becoming a distinct localized griping pain, severe enough to

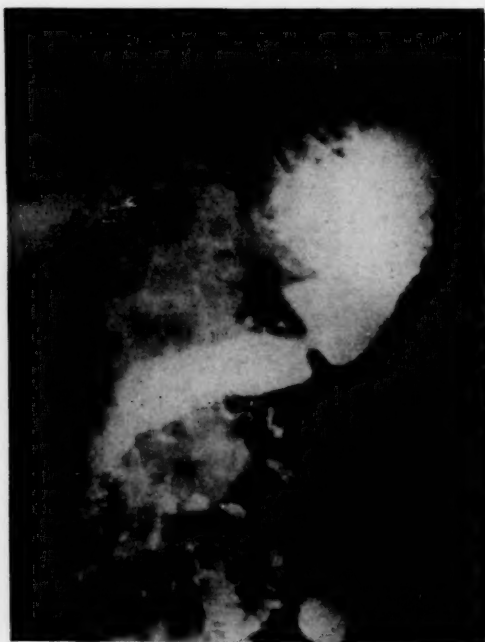


FIG. 2. Spasm persists after atropine sulfate administered intravenously.

prevent sleep. Pain continued unabated until morning when she was seen at my office.

Physical examination of the abdomen revealed only tenderness over the entire epigastrium; rigidity was absent. Temperature was normal and pulse 90. The functional nature of her condition was suspected and as patient had had no breakfast, immediate roentgenographic examination was performed (*Fig. 1*). A markedly contracted stomach was seen roentgenoscopically as



FIG. 3. Same patient as Fig. 1, twenty-four hours later. Stomach again filled with barium and of normal contour. Pain and spasm now absent.

well as on the films. The stomach was drawn high into the left epigastrium, with the antral portion directed downward and medially, the pylorus being rigidly patent. Peristalsis was not seen, although the meal emptied continuously. Atropine sulfate, gr. 1/100, was injected slowly intravenously and after 10 minutes the physiological effects of dryness and blurring vision occurred. Re-examination (*Fig. 2*) showed no essential change in stomach contour except further emptying.

Patient was sent home, ordered to bed, and an adequate barbiturate was ad-

ministered for sedation. On her return to the office next morning, patient reported that she had slept about 14 hours, felt very well, had eaten a light supper and breakfast. Pain and all other symptoms had completely subsided. Slight epigastric tenderness persisted. Roentgenographic and roentgenoscopic examination at this time revealed the stomach in normal position, size, tone and motility. Some barium was present in the colon from previous examination (Fig. 3).

#### COMMENT

A case of acute total gastropasm is presented. Diagnosis was suspected from the history and paucity of physical findings. Roentgenographic evidence substantiated this diagnosis. According to Feldman (7) regional (pylorospasm) or circumscribed (hour-glass) gastropasm are frequent, but total spasm involving the entire stomach is the rarest form encountered. Carman (5) in a paper on "hour-glass stomach" discusses one patient with total gastropasm whose roentgenograms were similar in appearance to those of the patient herein shown.

Alexander's theory of emotional conflict as a cause of gastric symptoms so completely fits the personality picture in my patient that a brief presentation of his views would be valuable. Alexander (1) found during psychoanalytic investigations that gastric symptoms often appear in patients with intense oral-receptive tendencies, *i.e.*, the wish to be taken care of and loved. These deep subconscious desires are incompatible with the ego of these adult individuals who consciously aspire to be aggressive, independent, and to accept responsibility. A conflict situation thereby exists in which the subconscious oral-receptive tendencies are violently repressed and denied by the conscious ego of these patients.

"It is highly characteristic that in their actual life relationships, they

avoid dependence and assume the exact opposite of the infantile oral-receptive attitude. Instead of receiving, we often see in them the tendency to give, instead of leaning on others, leadership, instead of dependence, they assume responsibility. These over-compensations must increase in their unconscious the longing for passive dependence and so these individuals often live beyond their psychic means.

"The function of nutrition is especially adapted to express the results of this conflict. The infantile wish to receive, to be taken care of, is ideally present in the suckling infant. The emotional qualities of receptivity, the wish to be taken care of and loved, become closely associated in an early period of life with the physiological functions of nutrition. Being fed thus becomes the primordial symbol of being loved. If the intense wish to receive, to be loved, is rejected by the adult ego, and consequently cannot find gratification in normal life relationships, then only the regressive pathway remains open; the wish to be loved becomes converted into the wish to be fed. The repressed longing to receive love and help mobilizes the innervations of the stomach which, since the beginning of extra-uterine life, are closely associated with the most primordial form of receiving something, namely the process of receiving food."

Since this stimulus has its origin in emotional conflict and is not dependent on the normal physiologic stimulus to receive food, *i.e.*, hunger, dysfunction eventually results, the stomach behaving constantly as it does during hunger with constant hypermotility and hypersecretion. The more intense the conflict situation, the more intense the stimulus to the stomach and, consequently, the greater the response in its motor and secretory functions.

To summarize, the psychoanalytic

concept of the origin of gastric neuroses and peptic ulcer, is based on the analytically well established fact that the deep subconscious wish to be taken care of and to be helped, which has constantly been found in the investigated gastric cases, is emotionally connected in the unconscious with the wish to be fed. These deep unconscious motives are strongly rejected by the adult whose ego manifests itself by overcompensation in conscious drives of aggression, giving, and acceptance of responsibility. This conflict situation expresses itself regressively in the primordial symbol of being loved, that is, being fed. This emotional stimulus acting through the innervation of the stomach engenders a response similar to that of the physiologic stimulus, hunger. This constant stimulation results in chronic hypersecretion and hypertonicity which eventually results in dysfunction.

The emotional pattern of the patient reported herein fits in well with this concept. Briefly, the pertinent personality characteristics are these: My patient is a buyer of dresses in a large New York department store, had little formal education, and started her career as a salesgirl. After a period of four years, she became head of her department, a position of great responsibility requiring aggressiveness, executive ability, and sagacity. She is well liked by her employers and business associates, has a reputation for fairness, and is over-generous and expansive. At the age of twenty she married and was happy for a time. After several years her husband began to drink heavily, became abusive, and financial difficulties arose. She obtained employment as a manikin, became financially independent, and divorced her husband after eight years of marriage. She lives alone, has many friends, male and female, has a relatively gay time, occa-

sionally indulging in alcoholic excesses as an outlet for nervous tension and mild depressions. She chooses convivial companions for these drinking bouts. She has had several transient love affairs but has not remarried. We have therefore, an aggressive, independent productive, giving individual with a well marked neurotic make-up, whose ego consciously rejects help from, or dependence on others.

For the last few years she has spent her summer holiday of two weeks visiting her mother who lives in a country village two-hours distant from New York. She sees her mother frequently weekends, and shares the cost of her mother's support with her brother. This year she planned an ocean voyage alone, and, as she feared her mother's recriminations regarding her holiday plans, she delayed informing her parent until the last weekend before sailing. As expected, the old lady keenly resented the loss of her daughter's yearly visit, and was very sharp in her criticism of her daughter's lack of filial sentiment. These accusations continued throughout the weekend and caused great nervous distress in my patient, due obviously to anxiety and guilt. On Monday, after sleeping poorly, she quarreled bitterly with her assistant at the store, over a long standing defect in business procedure. This episode left my patient in a state of nervous tension very alien to her usual feeling of well-being. The following evening, Tuesday, Mrs. P. M. was to give a radio talk on the subject of her rise to success as a department store buyer. This being her first talk on the air, she was frightened as to possible failure before the microphone and studio audience. This caused nervousness and irritability throughout the day and evening. After her radio talk she arrived home in a highly nervous state and with gastric symptoms as previously described.

## SUMMARY

In this patient, therefore, we have an individual with a personality pattern very similar to that of patients with gastric dysfunction described by Alexander. My patient is a neurotic woman with a strongly over-emphasized independence whose ego consciously rejects help or assistance from others. By an unusual series of events, strenuous emotional situations arose in her environment which probably motivated deep oral-receptive drives. These subconscious drives accumulated in intensity to the point where her ego could not repress them further, and eventually they expressed themselves regressively as somatic, gastric disease, in this instance, gastrospasm. Relief of subjective symptoms and of spasm,

shown roentgenographically, followed adequate sedation.

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# SOME PSYCHOLOGICAL ASPECTS OF INFLAMMATORY SKIN LESIONS

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THE EMOTIONAL difficulties of a patient with an inflammatory skin condition may affect the skin lesions in two ways. First, a skin lesion due to some organic cause may be increased in seriousness, or its healing delayed, by the patient's behavior toward it. Second, an inflammatory skin lesion may develop as an attempt to solve a difficult emotional problem.

The three cases presented here have been studied fully enough to show the connecting steps between the lesions of the skin and the patient's emotional problems.

## CASE I<sup>1</sup>

An 11-year-old boy was referred to me because of a severe obsessional neurosis. In the course of treatment, I discovered that he had an itching eruption of the feet. This had started several years before with a condition that was diagnosed as athlete's foot. He had found that treatment did not relieve the itching, so he evolved a daily procedure. When he took a bath, he would hold his feet under the scalding water from the faucet until they became numb, rubbing and picking at the thickened skin. This gave him temporary relief and, if he omitted it, the itching became worse. At times, his feet became blistered and very sore. Whether or not the original condition still persisted, there was no question that this treatment was extremely harmful to the

skin. He was so reticent about this habit, that it was only after many months of psychiatric treatment, he confessed it to me. He had other habits of a similar nature. He picked his nose so much that the irritation of the mucous membrane made him seem to have a chronic coryza. Before he fell asleep at night, he spent a long time rolling his head from side to side.

## CASE 2

An intelligent man, aged 38, suffered from a severe obsessional neurosis with many paranoid symptoms. He had a great many blackheads and pimples on his skin. On his scrotum, he had a number of swellings containing sebaceous matter which he called cysts. Some time before I saw him he had contracted athlete's foot and, although he had been treated, his feet still itched. His behavior toward his skin condition was peculiar. Much of his time was spent in front of a mirror examining his skin. When he discovered a blackhead, he would squeeze out the contents. His mother had started this habit when he was 13. He also spent much time squeezing pimples and small boils, in efforts to evacuate their contents. Consequently, each small boil would become surrounded by others. He treated the swellings on his scrotum in the same way. These scrotal swellings were the result of the scratching, squeezing, and pulling at his scrotum which had been an accompaniment of masturbation when he was a young adult. This had irritated the skin and closed the openings of the scrotal pores with retention of the sebaceous matter. Many times the skin of the scrotum became inflamed and small abscesses developed which he treated in the same way. It is remarkable that he was able to escape a serious scrotal infection. He also would scratch and rub his feet. He bathed as

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<sup>1</sup> This case has been reported more fully elsewhere; Gerald H. J. Pearson: A case of compulsion neurosis in an eleven year old boy, *American Journal of Orthopsychiatry*, 10: 136, 1940.



seldom as possible and seldom cleaned his teeth. He was ashamed to inform his dermatologist of his behavior and, although he had been told that such practices were injurious to his skin and might become injurious to his life, he persisted in them. His obsessional and paranoid ideas were very marked but he was able to keep most of his peculiarities concealed from his friends, acquaintances, and professional advisers who regarded him as an exceptionally clever man who, like most geniuses, was erratic. He came to me because he was contemplating suicide following an unfortunate love affair.

#### COMMENT

These two cases are marked examples of a condition that is frequently observed in psychiatric practice. Many of my patients manipulate and irritate existing skin lesions though not to the extent described here. It is well-known that psychotic patients frequently rub and manipulate their skin until they form lesions or aggravate already existing lesions by manipulating and picking at them.

These patients' treatment of their skin, and their continuation of a practice which they know may harm them seriously physically, and of which they are both ashamed and frightened, raises some interesting speculations. Children show a tendency to manipulate any irritating skin condition and among adolescents, rubbing a part of the body while the individual is engaged in some laborious mental occupation is very common.

It is well-known that manipulation of the skin produces a feeling of pleasure in all animals and human beings. The pleasure arises from the moderate stimulation of the sensory nerve endings. Certain parts of the body are supplied with more nerve endings than others and, therefore, are more likely to be manipulated because a greater feeling of pleasure results. This is par-

ticularly true of the genitals. When a young child has discovered the greater degree of pleasurable sensation from the manipulations of the genitals, he will tend to handle that part of the body much more frequently than other parts. If he is punished severely for this act, he will cease manipulating the genitals and return to the activity which preceded it, *i.e.*, handling and manipulating other parts of the skin surfaces, selecting parts that will be sensitive to the touch and which in some way resemble the genitals. For example, a boy who had the habit of squeezing blackheads and small boils, often wished that all the small boils would coalesce into one so that he could have more pleasure from squeezing it. In this instance, the magnified boil was a substitute for the penis.

In the two cases cited, there was sufficient material to prove that the handling of the skin surface was a substitute for handling the genitals. The patients themselves recognized some connection. In the first case, the boy noticed that when he rubbed his feet he had an erection and that they itched worse when he was left alone with his second sister with whom, at an earlier date, he had had sexual play. One day, when he was trying to abstain from further scalding, his feet itched badly. On this particular day, he had stolen a photograph of another boy's girl, partly to tease the boy, and partly because he felt sexual attraction for the girl. He felt his sexual sensations in his feet rather than in his genitals. The man, also, tended to squeeze his scrotal cysts and blackheads when laboring under ungratified sexual excitement. Both patients gave a history of masturbation preceding the skin manipulation and, in both cases, the masturbation had been stopped to a large extent because of punishments. The boy had been threat-

ened that, if he continued to masturbate, his hand would be cut off. When he was five years old, his arms had been splinted so he could not touch his genitals. As a result, when he wished to masturbate, he feared its dangerousness and refrained as much as possible and, instead, substituted the manipulation of his nose and feet. The chronological sequence (cessation of masturbation and substitution of another part of the body) in this case is not as clear as in the second one. The second patient remembered being tied in bed with his hands outside the bed clothes so that he could not touch his genitals. He had also been told that, if he masturbated, he would never grow up and would be punished by having his hands cut off. At the advice of a doctor, whom his parents consulted, the child was circumcised. The operation left him with a sore penis and the patient was angry, resentful and frightened. He felt that his parents had given him the shock of fear and pain as a punishment for his masturbation. He became so afraid that he gave up masturbation until he reached puberty. The reaccentuation of his sexual life at adolescence recalled the pain and turmoil. He had heard that boys in their teens passed through a difficult period of adjustment but that they grew out of these difficulties. He thought this statement referred to erections and prayed that soon he would become an adult so that his erections and the resulting temptation to masturbate would cease. He consulted a doctor because he thought he had acquired syphilis by masturbating a few times and, it was about this time, that the skin manipulation began.

In both cases, it was evident that the skin manipulation was an attempt to gratify sexual desires. Because masturbation had been forbidden under circumstances which made it seem

dangerous, the patients, in order to get relief from sexual excitement, went back to a mode of obtaining pleasure from his own body with which he had been familiar as a baby and which had preceded the pleasure obtained from touching his genitals. At this point, the specific type of pleasure found in touching the genitals was added to his infantile pleasure in manipulating the skin, *i.e.*, there was a regressive displacement of sexual feeling from the genitals to other parts of the skin surfaces.

This raises two important questions: 1) Why were these two patients so obsessed with the desire to masturbate? 2) Why was the manipulation continued when it caused suffering to the patients? It is well-known that sexual desire is an instinctive component of life and when it arises, demands gratification. If the type of gratification usually permitted by society is impossible, the individual will attempt to obtain gratification in the way he found possible at an earlier age, *i.e.*, he regresses. We have seen that when masturbation is forbidden, the child may adopt a more infantile method of obtaining pleasure by manipulation of the skin. The compulsion to masturbate arises also in the adult and older child when other forms of genital gratification are impossible. A person, who is unhappy, lonely, and frustrated, tends to feel an increase of an infantile type of sexual desire. He has no pleasure and wishes to obtain some from his own body as he did when he was a child. Both of these components cause the frustrated individual to regress. His regressive activities are accompanied by conscious and unconscious daydreams which take the place of the actual living he would like to do but which has been found impossible.

It is necessary, therefore, to understand what were the circumstances un-

der which these two patients abused their skin and what were their fantasies while doing it. The boy tended to scald his feet more on the days when he was in difficulties with his stepmother or his father or, for some other reason, was lonely and unhappy. He preceded the scalding of his feet by a special form of play which, because it consumed so much time and kept him so long in the bathroom, caused trouble with his parents. After he got into his bath, he would hold both knees slightly projecting above the bath water. He would urinate first on one knee and then on the other. Next, he would handle his genitals, inspecting very carefully the meatus and the urethral mucosa. While urinating on his knees, he had a fantasy that his knees were islands, one of which he always named after his stepmother. The urination was a hostile act against the stepmother because she neglected him and did not pay him the attention that he wished. It also represented his desire for his stepmother's attention. When he scalded his feet, he imagined that he was scalding her. He was also punishing himself for being angry at her and, by hurting himself, hoped that she would be forced to look after him.

The other knee represented his father whom he feared and disliked. The whole fantasy problem appeared very clearly in the following dream. He was trying to travel in an airplane to an older girl, a friend of his sister's, but was hindered by a space of water and an Indian. Therefore, he had to sit down and rub his feet. In this dream, the airplane represented his own genitals and, therefore, his feelings of love and sexuality. The older girl represented his stepmother and sister, and the Indian, his father. The dream said quite clearly that he would like to express affection for his older sister and stepmother, and love them

as a man loves a woman, but feared his father and his own jealous hostility towards his father. This fear frustrated his love for the mother and forced him to return to self-love and masturbation, *i.e.*, all that was left for him was to rub his feet.

The head rolling and nose picking were also accompanied by fantasies. When he rolled his head, he pretended he was engineer of a train which crossed bridges, stopped at stations, and had freight cars put on and taken off. The rolling motion corresponded to the sound of the car wheels. He did it usually after some trouble at home, or when he became sexually excited by thinking about his girl friend with whom he was in love. The association of this fantasy with sexual feelings had its background in his past life. The head rolling had begun in imitation of an older boy who had taught him sex play at boarding school. Underlying these ideas, lay the fantasy that he was an important and powerful man like his father, able to direct and command other people, to be the head of a business and a family, and, as such, to be respected, admired, and loved. In brief, he wished to be an actively aggressive male in both his vocational and sexual life.

The nose picking was also a response to sexual desire but was associated with a different set of ideas. He said he picked his nose for fear that the mucus running down the back of his throat and into his stomach would cause his death. He associated nasal and genital secretions, urine and semen. Unless he removed manually these genital secretions from his own body, *i.e.*, his sexual desires, he would be punished through death. This was corroborated by his further statement that his nose picking would injure his looks and, as a result, no girl would fall in love with him. Here, the underlying fantasy was one



of self-injury in order to protect himself from the greater danger of being a sexual person. This fantasy is a common accompaniment of masturbation. If the person masturbates, he can quiet his sexual desires, *i.e.*, castrate himself and thus his sexual desires towards girls will not get him into trouble.

His fantasy life was in marked contrast to his real life and can be summarized as follows:

- 1) He desired to be a virile, active male, successful sexually, vocationally, and socially. In reality, he was a very docile, non-aggressive, fearful child.

- 2) He desired to injure himself both to escape the danger of being a successful male and by being weak and sick to attract his stepmother's pity and love. In reality, he denied any wish for his stepmother's attention or love both by word and action.

- 3) He desired to revenge himself on the women who had treated him badly. Although he was conscious occasionally of this wish, he reacted to such conscious ideas with fear and attempts at self-punishment, such as the scalding of his feet.

The circumstances that accompanied the manipulation of the skin lesions in the second case are similar. The patient squeezed his skin lesions at times when he was unhappy and lonely, had not received invitations to social events that he expected, and felt he had no friends. Under these same circumstances, in his earlier days, he had masturbated. Although he had been warned and therefore, knew that the manipulation of his skin lesions would make them worse and might actually be dangerous to his health and life, he continued the practice. In doing so, he expressed a defiant, don't-care attitude and, also the partly-conscious wish that he might die. There was a strong suicidal element in much that he did. He had been told to stop drinking because

of a kidney condition but continued to do so against advice.

This suicidal wish had several motives. He felt defiant and revengeful when anyone advised him to live differently than he did. He considered himself competent to determine his own course of action and felt that other people had no business to interfere. Under the impulse of this feeling, he would do the very thing he had been advised against, regardless of how it might hurt him. In fact, he desired to be hurt in order that he might be punished for his defiance.

He feared his own sexual impulses to such an extent that he wished to be rid of them. He felt his parents of whom, both consciously and unconsciously, he was mortally terrified, would not like him because of these sexual impulses. As has been mentioned before, he had masturbated at one time to rid himself of sexual feelings. He, also, as a young adult, had masturbated before he went to a party, in order to keep from making sexual advances to girls. There were two ways of avoiding his dangerous sexual feelings—one to kill himself, the other, to kill his sexuality. His masturbation had been motivated by both of these desires, and his substitute masturbation, the skin manipulation, had the same purpose.

Another motive in his suicidal and self-injury ideas was the fear of his father. He felt that he had to avoid any form of behavior that would anger his father. He would often manipulate his skin before expressing an opinion that differed from his father's. He behaved as if he were not capable of being successful in his profession, and tended to avoid activity that would indicate that he was a grown-up man. He regarded being an adult as a competition with his father, and adult living as necessitating opposition to his father. He did not wish this to happen and, hence,



because of fear of his father, did not wish to grow up. As a child he had been told that if he masturbated, he would never grow up and, in his masturbation fantasies which he unconsciously retained in connection with his skin manipulation, was the idea that in masturbating, he would tear out the inside of his penis, and so ruin himself. His purpose in injuring his skin was to prevent himself from getting in a position where his father might be angry at him. He manipulated his skin and penis to prevent him from growing up. He wished his father to be kind to him, love him, and support him, and these things would not happen if he were grown up. When he squeezed his skin lesions, he often thought that if he could only make himself sick, he would be completely dependent on his father. He felt that he could only exist if he worked for, and was paid by, his father.

His skin manipulation was also associated with the opposite ideas to those of self-injury and suicide. When he had masturbated, he had the fantasy that he was making his penis larger and more like a man's, and so in the displaced masturbation he fancied that he was doing something that would make him more beautiful, attractive, impressive, and manly. He said often that no girl would be interested in him if he had skin and scrotal blemishes and, therefore, he must remove these. His actual behavior showed fear of being attractive to girls.

In both of these cases it can be seen plainly that the fantasies which accompanied the manipulation of the skin were daydreams of what the person would like to do, or had to do, in order to avoid finding himself in a position of danger. Both persons were unable to do the things they desired because of fear or anxiety.<sup>2</sup> As a result of

the fear and anxiety, the action was inhibited and the whole desire passed through the mind as a fantasy. The fantasy had the best opportunity for developing when the patient was alone, when as a little child he masturbated in his bedroom or bathroom, or later when he manipulated the skin. Both patients were obsessed with the desire to masturbate because their actual life was bringing them so little real gratification.

In all such cases where the individual has substituted wishing for doing, and when the act he desires to do would not meet with the real disapproval of society, it is necessary to examine first, the present life situation and second, the state of the patient's intrapsychic life and learn whether the inhibitions are produced by a real environmental situation or are the result of intrapsychic inhibitions.

In case 1, the boy had three fantasies: 1) to be a successful male; 2) to have his stepmother love him; 3) to revenge himself on women. His father was a very neurotic man who had to be babied and pampered. The whole house had to be quiet after dinner while he took a nap. He was very rigid in his ideas of child training, believed a child should be taught responsibility and flew into rages over minor forms of childish misbehavior. He disliked the boy and was inconsistent with him. For example, he was uncertain about punishing the boy for stepping on a newly-painted board, but flew into a rage because the boy wished to arrange his electric trains in his own way, a way, which was in fact, every bit as effective as the father's. He was willing to believe anything bad about the

real object. Anxiety is the dread of suffering at the hands of the person's superego (conscience). There are other components that go to make up the feeling of anxiety but the one mentioned here will make the distinction clear.

<sup>2</sup> There is a clear distinction between fear and anxiety. Fear is the dread of suffering at the hands of a

boy whether it was true or not but gave him no credit or praise for good achievement. He was intensely critical, strict, and ridiculed most of the things the boy wanted to do, even if they were recommended by some authority. The boy had a reading difficulty which was due to improper early training and the principal of his school recommended that he improve his reading by the use of "Big Little Books." When the boy told his father of this advice, the latter laughed him to scorn and demanded he read books too far advanced for him. As a result, the boy spent his own money on the "Big Little Books." It was evident that the father's behavior to the boy and the boy's consequent real fear of him, prevented the latter from being able to attain his masculine ambitions and, as a consequence, forced him to live them out in fantasy.

The stepmother was afraid of the boy and definitely preferred his two sisters. When he did well, she ignored him, but would punish him for the slightest infraction of her rules. She restricted him unnecessarily. One episode among many will serve as the best illustration. After dinner, the father was having his nap upstairs. The patient asked his stepmother if he could go up to his room and work on an airplane. She refused his request and said that he would disturb his father. He promised to be very quiet and, in fact, the part he was working on required no noise, but she persisted in her refusal. He next asked if he could go down into the cellar. She again refused and made him sit quietly in the living room with nothing to do until his father awoke. The only friendly gestures she made were of a teasing, tormenting nature which were humiliating to the patient. She was extremely afraid lest the neighbors criticize the boy's behavior and, indirectly, criticize her. It can be seen

that the stepmother's attitude did not provide the boy with the love he craved. Her rebuffs interposed a barrier between his cravings and their fulfillment and he had to live them out in fantasy. Her treatment angered him and he felt very hostile to her. His impulses to retaliate for her unkindness got him into trouble and, although he continued to react to her attitude in his fantasy, he had to suppress the spiteful actions.

There were other sources of his hatred for women. His mother had not wanted him and had attempted an abortion. Following his birth, his mother became aware of his father's promiscuity and there was a period of violent quarreling which terminated with the parent's separation when the boy was three years old. During this period, the mother became withdrawn from all the family and, particularly, from the boy. The boy was sent to a boarding school and the mother married again. When he was nine, he returned home to stay, and one month later his mother committed suicide. The mother was unkind to him and often told him that he ate so much he was impoverishing her and she would have to kill herself. His older sister and grandmother disliked him and several teachers in the boarding school ill-treated him. As a result, he had come to hate, dislike, and fear women and had a great number of cruel fantasies against them. He feared these ideas because, if he put them into effect, he would be punished. Consequently, he felt it wiser to keep them to himself and abuse himself instead of abusing women. This is well-illustrated by a fantasy that he would steal his father's gun and kill the stepmother. Later, he changed this to a fantasy of suicide in which he would imagine himself in his coffin while the stepmother wept over him. Also, if he

put these feelings into action, the various women whose love he wanted would be dead, and there would be no one to look after him.

Thus, in his present situation, two perfectly normal, ordinary cravings could not be satisfied because his parents would not permit them. His antagonistic fantasies could not be put into action because they really would result in his punishment. Consequently, the boy became very unhappy, withdrew his interest in other people into an interest in his own body, and lived with a mind full of longings and fantasies which, to him, were beyond fulfillment. In this case, the more important causes that prevented action were real and environmental, and only partly the result of intrapsychic inhibitions.

In case 2, intrapsychic inhibitions were the main causes that prevented the patient from putting his fantasies into action. His parents' attitude to him over many years had caused him to develop fears and dreads toward them and toward ordinary activities of life. His father seems to have been fond of his children, but, during the patient's childhood, worked hard and had little time to spend with his family. He amassed a considerable fortune, much of which was spent during the first fifteen years of the patient's life. He was short-tempered, critical, and demanded a high standard of excellence in the patient's work. Before he entered his father's business, the patient was employed by another firm for whom he had done a piece of work which secured very favorable attention from his superiors. The patient showed it to his father who said it was good, but criticized vigorously one minor mistake in grammar. Outsiders have told the patient that his father was so prejudiced, bigoted, and convinced that all should bow to his decisions

that he injured all subordinates with whom he came in contact. He was reputed by his wife to be interested in his children, but to lack understanding of them. When the patient was small, the day before each birthday, the father would tell him that he should always be considerate of the mother because he had caused her so much pain at the time of his birth. At twenty-two, the patient asked for advice about his sexual feelings and the father recommended hard exercises, a low diet, and hard work. He tried to break the patient of smoking by offering monetary rewards and the patient has conformed for the set period of time. He did not pay the patient a regular salary but gave him varying amounts every three or four months. He considered the patient very clever but disliked his interests and friends.

The mother, who was slightly younger than the father, was alert, very dominant, and knew all details of the father's business. For a number of years, she had realized the father's deficiencies as a social person and had developed intellectual interests to offset her unsatisfactory marriage. For the first six or eight years of the patient's life, she seldom praised him, accepted his behavior when he conformed as natural but was very strict and critical when he failed to conform. She whipped both the patient and his brother often. When the patient was about eight, her attitude changed. She and the father had gone away, leaving the patient and his brother with her sister. The two boys broke loose, behaved very badly, and rode roughshod over the aunt. On the mother's return, she concluded her methods had not been successful and became less strict. Her diary during the patient's early life (four to six) contains many entries indicating her pleasure in the children's rather pitiful reactions to punishment.

She definitely preferred her second son and was quite upset at his death. After this occurred, her attitude to the patient changed more and she gave him much of the close interest she had shown the brother. Although the bulk of the family fortune was in her name and she disposed of it as she desired, she was insecure as to her financial future. She pretended to be generous to the patient and expected him to be very grateful for her really niggardly gifts. She made a will leaving him the interest of only three-quarters of her estate. If he has children, they are to get the principal. If he dies childless, the principal will go to an institution. She stated that she did not wish the patient to have a child as she thought the family line should be stopped. Recently, when suffering from cramps in her legs, she told the patient that they were the result of his birth. Several years ago she told the patient that if she had a stroke, or developed cancer, both of which diseases she feared, she wished him to arrange matters so she could commit suicide.

The patient's thoughts were filled with a mixture of fear, love, and hate for his father and of greater fear, love, and hate for his mother. The hate for both parents often reached the extent of wishing for their death. At the same time he was mortally afraid of what they might do to him if they learned of such ideas. As the patient is an adult there is not much reason for these emotional reactions at present even though his father was overbearing and his mother restricted him. His reactions are carried over from his childhood. Time does not permit the description of his tangled, conflicting ideas about his parents, nor the way he displaced this conflict, from his childhood to the present, and consequently, involved other people than his parents. One example is interesting.

When his dermatologist told him not to squeeze his lesions, he became furious at this interference with his activities, but did not allow the doctor to know this because he was actually afraid that the doctor would kill him. At another time, he was kept waiting for a few minutes, and became so enraged at this lack of the doctor's attention that he refused to consult him again. At this time, also, he did not complain to the doctor but behaved as if he felt friendly lest the doctor kill him. He is so capable of covering up his feelings that he often will not know he is angry until long after the incident has taken place. His difficulties, in putting his desires to be a successful man into action, are the result of a still-existing but childish intrapsychic conflict between opposing feelings.

It can be seen, therefore, that the irrational behavior of these two patients toward their skin lesions was the result of their dread of reacting emotionally in their real life. In the first case, the dread is largely a fear of the present environment. In the second, it is largely anxiety. When the behavior toward their skin is translated into terms of actual human relationships, the behavior does not seem at all irrational.

#### CASE 3

A woman of forty was referred by a dermatologist because of an itching eruption of the feet. During the course of treatment, she had mentioned to the doctor a number of serious problems in her family and it was for these she was sent to me. The itching eruption of the feet had appeared three years before and was accompanied by a feeling of depression. She did not have any peculiar behavior associated with the itching.

#### COMMENT

This woman's outstanding psychic reaction was fear of her mother and



husband. The husband ill-treated her, beat her, was unfaithful and criticized her complaints about his unfaithfulness. Although she really tried to be a good wife and helpmate, he shared no interests with her and gave her little except abuse. He also ill-treated the children, particularly the oldest son who was her favorite. Although she had contemplated leaving her husband, she felt it would be wrong because the children would not like it. As a result she began to contemplate ways of getting rid of these two obstacles, her conscience and her children.

Her wish to get rid of her children is well-illustrated by the following dream: She was asked to give evidence that would send her eldest son to jail. She was very frightened and did not wish to do so.

The evening before having this dream, she had asked her husband why they could not go to the races, a recreation she enjoyed very much. He said his financial situation made this impossible and that she would have to curtail her expenses for clothes, recreation, and treatment, and that even with this economy it would be very hard to send the oldest son to college. She became very angry, and said that he would go to college even if she had to work to earn the money. Heretofore, she had thought of working only as a means of getting more pleasure for herself. Although she had no conscious recognition of her reaction, it can be seen from the dream that she thought a good solution would be to get rid of the boy so that she could have the extra money for herself. The oldest son represented in her mind her younger brother whom she had hated because he was the parents' favorite and had been indulged at her expense. When he grew up, he actually embezzled money and was imprisoned. Now she wished that the same thing would happen to her

son. She kept the wish to be rid of the children unconscious and refused to recognize the following two reasons which, under the circumstances, made the wish natural: 1) She had been trained never to hate any child and that she must love them all, especially her brothers, and particularly her younger brother; 2) She loved her own children dearly and felt she could not afford to lose them because they were practically the only human beings that gave her any affection. The effort to keep her hostile ideas unconscious filled her with feelings of guilt and self-blame about all kinds of trivial things and caused her to accept as valid the outrageous reproofs of her husband and mother.

Her mother had been very strict and punished her for every childish untoward action, so that by the time she was five, even though she knew it was not true, she had convinced herself that her mother was right about everything. Any evidence to the contrary had no validity for her and she maintained this attitude in her dealings with her husband. Besides being strict, the mother rejected the child and lavished all her love on the younger brother. When the patient graduated from high school, she wished to be a dancer, but the mother forced her to become a school teacher. She acceded but became too ill to finish her course. She did not want to teach school but was so frightened of her mother that she only dared defy her by the excuse of her own suffering. All through her married life she accepted the mother's word as law and dared not differ from her in idea or act. Rather suddenly, when she was about thirty-seven, she decided she was old enough to live her own life and need not obey her mother so slavishly. However, the fear of her mother still remained. About the same time she had definite evidence that her

husband was unfaithful and she wanted to leave him. After a brief interval, the foot condition began.

In analysis, it was evident that the itching foot represented a desire to leave her husband, and seek her own happiness. She felt this was impossible for the reasons stated above and that she was a wicked woman to have such desires. She punished herself for such ideas by the suffering her foot caused her. The itching foot also represented the desire to dance, which she had had as a young adult, and which her mother had forbidden. Her illness, therefore, was compounded of the desire to do as she liked and get her own happiness, and the fear of her mother and her conscience. When this was analyzed, the foot condition healed. The conflict between the desire to do as she wished and fear of her mother represented by her itching foot goes back to her childhood. From about the age of five she has had nightmares in which someone catches hold of her foot with the intention of hurting her. The details concerning this nightmare have not, as yet, been analyzed.

In this case, two opposing feelings, the desire to do as she wished and her fear and guilt about the desire, were put out of her mind and their emotional values converted into a painful condition of the foot. Physiologists have not yet demonstrated the physiochemical mechanism of such conversions. This case is similar to other cases reported in the literature.<sup>3</sup>

#### DISCUSSION

The treatment of these three cases involves two steps. First, one has to ascertain the nature of the psychic conflict. This is discovered through a thorough acquaintance with all the details of the patient's present and past life,

his ideas, and his fantasies. From such information one can determine the patient's desires, aspirations, and the attempts he makes, and does not make to gratify them. At the same time, one learns whether the inhibitions that prevent the fulfillment of his desires in action and so force him into fantasy are real situations in his present life, as was largely true in case 1, whether they are inhibitions he imposes on himself as a result of his early life, as in case 2, or whether they are a combination of these two possibilities as in case 3.

In children, particularly young children, and in elderly people, the inhibitions are more likely to result from the first instance, but the nearer childhood the patient is, the more importance can be attached to the second instance. In the first instance, one has to determine whether the real situation can be changed, or whether there is another solution than illness whose existence the patient has not recognized and which he can be led to accept. In the second instance, treatment has to be directed to a reconstruction of the patient's whole emotional life. Often both forms of treatment have to be combined.

The investigation and treatment of such cases is difficult to obtain during one or more brief interviews. It requires time and patience as well as a consciously directed effort to ascertain the facts of the patient's life. In the first two cases, I was greatly impressed with the patients' extreme reticence about their behavior. They were intensely ashamed and afraid to confess it even to me, and never had breathed a word about it to any other person.

#### SUMMARY

Two cases are reported in which the patients irritated and injured inflammatory lesions of the skin. Their be-

<sup>3</sup> Leo Bartemeir: Study of a case of chronic exudative dermatitis, *Psychoanalyt. Quart.*, 7: 216, 1938.

havior to their skin lesions was a form of childish autoerotism to which they turned because they found it impossible to have adequate emotional reactions and social relationships in their real life. Their inability to react adequately emotionally was due to fear; in one case largely a real fear of the consequences of any reaction because of an over-restricted environment, in the other, because of a fear of the superego.

One case is presented in which the

patient solved her emotional difficulties by converting the emotional problem into an itching painful skin lesion. She had conflict between her desire to leave home and accomplish her desires, and her fear of her superego which was based on fear of social disapproval and a childish fear of her mother.

The solution of the emotional problems enabled the two first patients to cease their irrational behavior toward their skin lesions and cured the skin lesions of the third patient.

## STUDIES ON A GROUP OF CHILDREN WITH PSYCHIATRIC DISORDERS.\* I. ELECTROENCEPHALOGRAPHIC STUDIES

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STUDY OF BEHAVIOR PROBLEM CHILDREN by means of electroencephalography, as reported by Jasper and his co-workers (2,3) yielded interesting results. Approximately 70 per cent of the children used in their study showed abnormal cortical potentials. The present study, besides confirming these results, correlates the electroencephalographic findings with the clinical classification in current use in the New York State Department of Mental Hygiene and, further, demonstrates the value of electroencephalography in establishing localized organic pathology in a number of children who might otherwise be simply classified as suffering from "Psychiatric disorder."

### METHOD

Clinical and electroencephalographic observations on 44 children were obtained. Most of the children were admitted to the Children's Service of the New York State Psychiatric Institute for intensive study. In general, on admission, they were referred to the Psychiatric Institute as psychiatric cases. Some of the children were examined and observed in the OPD of the Institute. Electroencephalograms were performed at least twice on every child. A two channel electroencephalograph

with ink writing recorders, as devised by one of the authors (W.E.R.), was used. Standard records were taken under as near "basal" conditions as possible with the children lying relaxed in a dark room with eyes closed. Four electrodes were placed symmetrically in the frontal and occipital regions. The leads used regularly were trans-frontal, trans-occipital and fronto-occipital (right and left). If these recordings gave any indication of focal pathology further electrodes were placed to determine the focus of pathological activity.

### OBSERVATION

The ages of the 44 children used in the experiment varied from  $3\frac{1}{2}$ -13 years with an average of 8.7 years. The I.Q. was determined in 34 cases. It varied between 55 and 130 with an average of 95.1. Two other cases had very low I.Q.'s which could not be determined exactly but which certainly were not higher than 50. If we accept an I.Q. of 50 for these 2 cases, an average of 92.6 was obtained for the whole group.

In general, 5 types of electroencephalograms were obtained: 1) Normal electroencephalograms, 2) borderline normal electroencephalograms, 3) electroencephalograms showing diffuse cortical dysrhythmia, 4) electroencephalograms showing focal cortical dysrhythmia, and 5) doubtful records. The criteria of the normal electroencephalogram of children are generally well established since the studies of Linds-

\* This series of studies are carried out under dual supervision: The research under S. E. Barrera, Principal Research Psychiatrist and the clinical observations under I. H. MacKinnon, Principal Clinical Psychiatrist.

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ley (6) and Smith (8). These authors give both the average alpha frequency as well as the upper and lower limits of normal variation of this frequency for age groups from 3 months to 16 years. The absence of any potentials below the lower limits of the alpha frequency for any given age group was considered normal. Under the classification of borderline normal electroencephalo-

focal cortical dysrhythmia included those in which a constant bilateral difference appeared and in which it was possible to determine one or more foci of pathological activity. The fifth group, classified as "doubtful records" included cases in which it was not possible to clearly determine whether a cortical dysrhythmia was diffuse or focal.

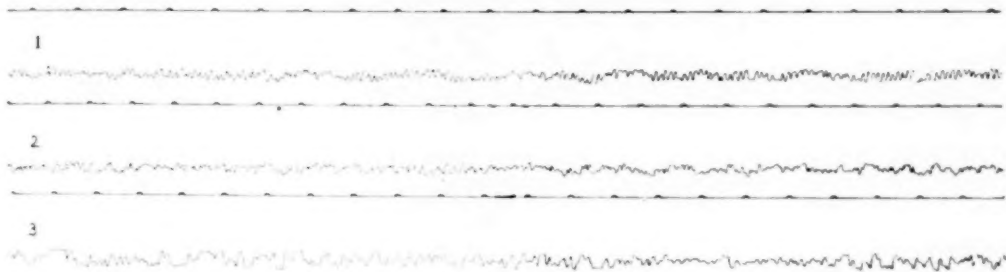


FIG. 1. 1. Normal electroencephalogram. 2. Borderline normal electroencephalogram. 3. Diffuse cortical dysrhythmia (time line represents seconds).

grams were included those records which, without showing any definitely abnormal patterns, showed occasional short series of 2-4 cycles per second activity. Under the classification of electroencephalograms showing diffuse cortical dysrhythmia were included those records containing potentials appearing serially of an amplitude of 50 microvolts or more of a frequency of 4 cycles per second or less present all over the cortex. Fig. 1 shows sections of 3 such records. Record 1 is that of a normal electroencephalogram. Record 2 is a portion of a record classified as borderline normal, and Record 3 is classified as showing diffuse cortical dysrhythmia. In all of these 3 records the time line indicates seconds. Only those cases were classified as abnormal in which these patterns were found under standard conditions. Cases in which such potentials were found only after hyperventilation were not included. Electroencephalograms classified as indicating

Of the 44 cases studied the distribution of the electroencephalographic classifications was as follows: 9 cases fell in the normal group, 5 cases were included in the borderline normal, the largest group of 20 cases fell in the diffuse cortical dysrhythmia group, 7 were in the focal cortical dysrhythmia group and 3 were classified as doubtful. From these figures it is seen that 30 out of the

TABLE I  
DIAGNOSIS FROM CASE HISTORY

Group of Electroencephalograms	No Diagnosis	Primary Behavior Disorder	Organic Brain Disease	Epilepsy	Mental Deficiency	Schizoid	Depression With Malnutrition	Total
Normal	2	7	—	—	—	—	—	9
Borderline	1	2	1	—	—	—	1	5
Diffuse Dysrhythmia	4	11	—	4	1	—	—	20
Focal Dysrhythmia	1	1	3	—	1	1	—	7
Doubtful	1	1	1	—	—	—	—	3

TABLE II  
GROUPING OF BEHAVIOR DISORDERS

Group of Electroencephalograms	Conduct Type	Neurotic Type	Mixed Type	Undifferentiated	Total
Normal	1	4	1	1	7
Borderline	1	—	—	1	2
Diffuse Dysrhythmia	6	2	1	2	11
Focal Dysrhythmia	1	—	—	—	1
Doubtful	1	—	—	—	1

44 cases (68 per cent) studied were classified as showing a definitely abnormal electroencephalogram.

The patients were also classified according to the clinical diagnosis utilizing the scheme of classification as adopted by the New York State Department of Mental Hygiene. Table I shows the distribution of the various types of electroencephalograms in relation to the clinical diagnosis in the case history. Table II further classifies the group of 22 patients classed as primary behavior disorders into the sub-groups of primary behavior disorders.

In order to illustrate the types of clinical cases on which these studies were made, two clinical abstracts from the groups of behavior disorder conduct type and behavior disorder neurotic type will be presented. These diagnoses were made on by far the greatest number of cases.

#### CASE I

##### DIAGNOSIS: PRIMARY BEHAVIOR DISORDER CONDUCT TYPE

Patient, A. D., a boy of 11 years of age was brought to the hospital because of progressive hyperactivity, disobedience and periods during which he seemed completely unable to mind any requests. He had temper tantrums at home and marked behavior difficulties in school. These behavior disorders had lasted about two years before admission. His infancy and early childhood had been marked by severe illnesses includ-

ing generalized eczema, skin abscesses, whooping cough and asthma. Attacks resembling acute terror occurred following admission to kindergarten at five years of age. During the two years preceding his admission it was reported from school that the patient was very restless and apparently never sat still. He responded poorly to discipline and was constantly making faces to make the other children laugh. At first this peculiar behavior was limited to his school but later he seemed to become more uncontrolled at home and began to ignore his mother and misbehaved in the home setting. Rewards, whipping and restraint all failed to have any effect. He developed severe temper tantrums almost resembling fits. Enuresis returned on the nights following tantrums. He became very evasive in regard to sex problems. This erratic hyperactivity became progressively worse and he began to have spells in which he would suddenly look peculiar, tear up paper or anything within reach and chew it up. His play was always hyperactive and aggressive. There were occasional periods of petty stealing around the home including stealing of small amounts of money, usually to buy candy. He ran away from home two or three times because he had not been allowed to go to the movies. He failed to pass in his school work. Most of his violent behavior was confined to the setting in which his mother, immediate family or school teacher were present. When, after much pleading, the family bought him a dog, he so mistreated it that the dog became extremely afraid of the patient. He was quite jealous of his 18-year-old brother and expressed it by doing spiteful things such as spoiling or giving away the brother's possessions.

While in the hospital his behavior difficulties were essentially as described above. He soon became a dominating figure on the ward. It was necessary to watch him fairly closely and discipline him repeatedly in order to prevent overt, aggressive behavior toward the smaller children. He was quite overactive and very shortly after admission he demonstrated some of the delinquency that necessitated hospitalization. Physical and laboratory examinations including the

pneumoencephalogram were essentially normal. The electroencephalogram, however, revealed bursts of 2-4 per second waves in series bilaterally. Psychometric examination revealed an I.Q. of a dull, normal child (81).

He was considered as falling within the group of primary behavior disorder, conduct type. Reservations were made, however, as to the possibility of an underlying epileptic type of response as he seemed to respond fairly well for a time under dilantin therapy.

#### CASE 2

##### DIAGNOSIS: PRIMARY BEHAVIOR DISORDER, NEUROTIC TYPE (FEARS)

This patient, a 12-year-old boy, was admitted to the hospital because of "nervousness." He was afraid of the dark and could not go to sleep unless the light was left on in his room. He was cranky and had a poor appetite. He worried constantly about his health and stated that he was afraid he would get sick. He claimed that he had bad dreams at night and couldn't sleep. Shortly before admission he began to complain of a morning headache and a stuffy nose. In addition he complained of a visible throbbing in his stomach when he was excited. He was backward in school and was very sensitive about it.

His early infancy and childhood were reported as essentially normal except for the fact that he did not talk at all until about three years of age and did not talk well until the age of five. He constantly received poor marks in school and was left back many times. The mother was apparently oversolicitous concerning the child's health and conduct and many habits of marked protection of the mother for the child were established at an early age. He slept in his parents' room until the age of nine. At the age of six, when he began school, he became cranky and lost his appetite. A physician made a diagnosis of mild St. Vitus Dance at that time. The patient was taken out of school and kept in bed several weeks at a time. On return to school his crankiness and loss of appetite returned and he became afraid of the dark and would not go to sleep unless the light was turned on in his room.

Later he became afraid of all dark places and after that time the symptoms for which he was admitted to the hospital developed progressively. On admission to the hospital, he again manifested all of the symptoms for which he had been admitted. He appeared to be fearful of people, was shy and tense, and seemed to be slow in understanding what he was asked to do. He appeared very restless and his general bearing was that of timidity and lack of assurance. At first he had a continuous painful type of expression on his face, seemed anxious and eager to speak to anyone concerning his symptoms. He ate poorly and cried to have his light left on at night. He appeared bewildered at times when asked to do anything and required assistance with written work. He whined and fussed a great deal and had a number of somatic complaints. He seemed infantile in his play and behavior, cried frequently and ran to the nurse with all his difficulties. He repeatedly asked for his mother. He generally complained of fatigue or headache when faced with an unpleasant task. On several occasions, contraction of his abdominal muscles was observed during periods of excitement. He attended school in the hospital, enjoyed it and was promoted at the end of the term. With time he developed more confidence, slept better and stated that he had no dreams. He ate well and was not finicky about his food. He became more cheerful and complained less. He followed routine with less difficulty, stated that he no longer felt nervous and that his stomach no longer jumped. He still expressed occasional somatic complaints.

His laboratory tests and physical examination were essentially normal except for pupillary reactions which appeared sluggish and deep reflexes which were reported as exaggerated. X-ray of the lumbosacral spine showed a partial failure of fusion of the lamina of the first sacral segment. The psychological tests reported an I.Q. of 82 rating of dull normal. On several tests he was reported as showing great irregularity of test performance with indications that his potential ability was somewhat better than his mental age indicated. Electroencephalographic report showed no ab-

normal findings. He was placed in the group of primary behavior disorder, neurotic type, with anxiety and fears.

Normal electroencephalograms were obtained in 9 cases out of the 44 patients with an age distribution from 7 to 13 years and an average of 10 years. In this group the I.Q.'s ranged from 82 to 126 with an average of 99. None of these cases presented any abnormal neurological symptoms or signs. No pneumoencephalograms were performed in this group. The behavior problem, as seen by the clinical classification, was that of conduct type in 1 case, neurotic type in 4 cases, mixed type in 1 case and undifferentiated in 1 case. Two others of the 9 cases presented behavior problems which were not clear for diagnosis and remained without diagnosis. The neurotic sub-group of behavior disorders presented various neurotic syndromes, *e.g.*, anxiety compulsions, etc. It was considered by one of us, (H. S.) that possibly an epileptoid personality might be considered as present in perhaps 4 of the 9 cases; although no convulsive seizures had been reported for any cases in this group.

The group of borderline normal electroencephalograms consisting of 5 cases ranged in age between 7 and 13 years with an average of 10 years. The I.Q. ranged between 93 and 106 with an average of 101. No patients in this group presented abnormal neurological symptoms or signs. One patient in this group was examined by pneumoencephalography and a questionable slight hydrocephalus was reported. Two of the records came from patients with primary behavior disorder, 1 with organic brain disease, and 1 with malnutrition. One other case could not be clearly classified. The 2 primary behavior disorder cases were subdivided into one of the conduct type and one undifferentiated type. Again in this group it was felt by some that possibly

3 of the 5 cases presented epileptoid personalities. Thus, by combining the two groups classified by the electroencephalographic findings into one group characterized by the absence of definite electroencephalographic pathology it can be seen that it comprises 14 cases with an average age of 9 years and ages ranging from 6 to 13 years with I.Q.'s ranging between 82 and 126 with an average of 99.5. At least half of the 14 cases could be correctly placed in the group of primary behavior disorder with a large majority in the subgroup of neurotic type.

Almost 50 per cent, or 20 cases of the 44 studied, gave electroencephalograms which could be classified as presenting diffuse cortical dysrhythmia as defined above. The ages of the cases with this electroencephalographic classification ranged from 3 to 13 years with an average age of 7 years. The I.Q.'s varied between 70 and 114 with an average of 94.1. In 1 case it was not possible to exactly determine the I.Q. but it was certainly not higher than 50. Assuming this value for the case, the average of all was 91.1. The I.Q. was below 80 in 4 cases. It is of interest that none of these cases had abnormal neurological symptoms. A pneumoencephalogram was obtained in 5 cases. It was reported as normal in 3 cases with a slight symmetrical dilatation of the ventricles in the other 2 cases. In this group, 2 of the patients were chronic epileptics; 2 others suffered from pyknolepsy and finally 3 others in this group had suffered from a few convulsive seizures earlier in life but up to the time of examination had not developed a chronic convulsive condition. Considering the 2 patients with chronic convulsive seizures and the 2 suffering from pyknolepsy in one group, it is clear that 4 of the 20 patients in this group could be classified clinically as epileptics. One case with the low I.Q. would fall defi-



nately within the group of mental deficiency. In 4 others no clear diagnosis could be made and, finally, in the 11 remaining a clinical diagnosis of primary behavior disorder could be established. Of the 11 with the clinical diagnosis of primary behavior disorder, 6 were in the conduct type sub-group, 2 in the neurotic type, 1 in the mixed type, and 2 in the undifferentiated. In many of these patients showing diffuse cortical dysrhythmia in the electroencephalogram, especially those classified clinically as epilepsy, or as cases with early convulsions but not chronic convulsive states, the personality seemed to fit well into that of the epileptoid personality group. These epileptoid patients could, in general, be described in 3 categories of symptoms: 1) the assaultive, destructive, disobedient type of child with constant irritability and hostility toward the environment, 2) the runaway type with fugue-like states, 3) the type with episodic temper outbursts showing a relatively normal type of behavior between outbursts. Some of the cases presented a combination of these symptom groups. In one of the patients, in addition to the constant behavior problem, there was one short episode of hallucinatory confusion lasting for a few hours and corresponding to an episodic dream state in Kleist's conception (5).

The patients presenting electroencephalographic findings classified as focal dysrhythmia constituted 7 out of the 44 cases. The ages of these patients varied from 8 to 12 years with an average of 10 years. The I.Q.'s varied from 55 to 130 with an average of 87. In one case exact determination of the I.Q. could not be obtained but was certainly not higher than 50. With the assumption of the value in this case, an average of 81.7 was obtained for the group. Five children had an I.Q. below 80. Abnormal clinical neurological findings

were obtained in 3 cases. Pneumoencephalograms performed on 6 of the 7 cases were reported as abnormal in 4 cases. Each case in which the electroencephalographic diagnosis of focal pathology was obtained presented clinical confirmation either by the pneumoencephalogram or neurological examination. One of the cases suffered from tuberous sclerosis. In the other cases a definite diagnosis of the special brain pathology could not be made. Only in 1 case was there an indication of a chronic progressive cerebral process. The remaining 5 cases did not show any history or symptoms of progressive disease and suffered evidently from early acquired brain damage due to birth trauma, encephalitis, meningitis, etc. The clinical psychiatric diagnoses in these 7 cases were that of primary behavior disorder in 1 case, the conduct type in 1 case, organic brain disease in 3 cases, mental deficiency in 1 case, and a schizophrenic-like syndrome in 1 case. One other case of the 7 could not be accurately diagnosed psychiatrically. The exact question as to how many of these children presented a clinical personality picture which might have been classified as an epileptoid personality could not be definitely answered. It was felt, however, by one of us, (H. S.) that 6 of the 7 might have been classified as being of the epileptoid personality group as described above. One of the cases showed organic regression with increasing intellectual deterioration.

In the group of 3 cases classified as doubtful electroencephalograms, there was an age distribution from 8 to 10 years with an average of 9.3 years. The I.Q. ranged from 69 to 128 with an average of 100 and was below 80 in one case. No pathological symptoms or signs were found in any of these 3 cases. A pneumoencephalogram was obtained in 1 case and was normal. One case

showed a chronic, progressive deterioration and one of us, (H.S.) again felt that 2 of the patients might be classified as presenting an epileptoid personality.

Thus, summarizing the 30 cases presenting some form of abnormal cortical activity as detected by the electroencephalograph, the following facts were noted:

1) The ages varied from 3 to 13 years with an average of 8.2 years.

2) The I.Q.'s varied from 55 to 130, as far as could be measured, with an average of 92.6.

3) Including 2 cases with an I.Q., certainly not higher than 50, and assuming 50 for these 2 cases, an I.Q. of 82.5 was obtained.

4) The I.Q. was lower than 80 in 10 cases.

Disregarding the official clinical diagnosis as listed above in these cases, one of us, (H.S.) felt that 28 of the 30 might be grouped in the epileptoid personality group. Two others showed organic chronic deterioration.

#### DISCUSSION

The findings obtained in this study are in good agreement with those of Jasper and his group in that they indicate a very high percentage (68 per cent) of abnormal electroencephalograms in children under care of a psychiatric unit with a clinical picture roughly classifiable as a behavior problem. This result seems important in itself. These findings indicate a basic disturbance on a physiological level in such cases, making imperative further study toward the therapy of such states on a somato-therapeutic level, in addition to the psychotherapeutic methods (correction of environmental factors, etc.).

The importance of these clinical, neurological, pneumoencephalographic and electroencephalographic studies of such problem children is indicated by

the fact that, in addition to the large number of cases presenting electroencephalographically a diffuse cortical dysrhythmia, a group of 7 patients, comprising 16 per cent of the total, were found to present evidence of focal dysrhythmia. In only 3 of these 7 cases was the electroencephalographic diagnosis of focal pathology confirmed by means of the usual neurological examination. In the 4 remaining cases, the diagnosis of organic brain damage would not have been made without the aid of either electro- or pneumoencephalography. This indicates to us the value of electroencephalography which may prove the presence of focal pathology even when the pneumoencephalogram is normal. It would seem that the painless and simple procedure of electroencephalography might well be advised for every case presenting a behavior problem even before the more rigorous and painful procedure of pneumoencephalography is carried out.

Some of the findings, relating the abnormal electroencephalogram with intelligence, seem to be of interest. In the group of 44 children, none of the 14 presenting normal or borderline electroencephalograms had an I.Q. of less than 80 while 10 of the 30 cases with abnormal electroencephalograms had an I.Q. of lower than 80. Since 4 of these 10 cases were classified in the group of diffuse cortical dysrhythmia, it seems possible that this dysrhythmia may indicate a disturbance of brain function severe enough to cause more than a behavior disorder alone. On the other hand, there is no doubt that the group classified as presenting focal dysrhythmia showed the most severe disturbance of intellectual function as indicated by the I.Q. Five out of the 7 cases of this group had an I.Q. of lower than 80 and the average I.Q. of this group (81.7) was definitely lower than the average of the rest of the cases

(95.3). This may indicate that the coincidence of low intelligence, as indicated by the I.Q. and the behavior problem, should arouse a suspicion of an organic pathology and these cases should be tested adequately.

It will be noted that at points in our presentation the term epileptoid personality has been used by one of us to describe the type of personality in the patients without regard to the actual clinical diagnosis from the official classification list. A description of behavior types included in the conception of epileptoid personality has been given above. The possibility of such a classification of epileptoid personality could be applied to perhaps 35 of the children. Of these 35, 25 showed abnormal electroencephalograms and 7 did not show electroencephalographic abnormality. The question as to the justification for use of this conception of epileptoid personality is, as yet, far from being settled. Some authors want to eliminate this conception completely (1, 4). These authors feel that there is no more than an outward similarity in the behavior of some psychopathic personalities as compared with that of epileptics. However, Mauz (7) assumes that there is some deeper biological relationship between epileptoids and epileptics. The present studies, in addition to recognizing likenesses in behavior between the two groups, also present evidence as to the similarity in brain potentials between the two groups. On the basis of these findings it would appear that some epileptoids are biologically related to epileptics although the exact nature of this relationship is as yet unknown.

Assuming for a moment that epileptoids are a personality group and dividing them on the basis of electroencephalographic findings, the following groups may be set up: 1) idiopathic epileptoids with a possible biological rela-

tionship to epilepsy as indicated by the presence of diffuse cerebral dysrhythmia, 2) symptomatic epileptoids in which the epileptoid behavior originates from an organic pathology of the brain indicated by focal cerebral dysrhythmia, 3) pseudo-epileptoids in which there is a close resemblance in the behavior to that of epileptics but in which no abnormal electroencephalogram was found. It is highly improbable that the absence of abnormality can be explained by temporary absence of these abnormal electrical patterns, also seen in epileptics, because such abnormal potentials were never detected in our cases even though repeated tests were performed. It is probable that this difference between pseudo-epileptoids and other epileptoids may be of more than theoretical value. There might be considerable difference between these two groups regarding choice of therapy and efficacy of therapy. It might be expected that in the epileptoids anti-epileptic treatment might be of some value while in the pseudo-epileptoids other forms of therapy, such as psychotherapy, might be the method of choice. In these two groups of cases, some preliminary experiments with anti-epileptic treatment have been carried out in the Psychiatric Institute, by Dr. Cotton on the children's service. However, sufficient observations have not as yet been accumulated to allow any definite conclusions to be drawn as to the effect of this treatment upon the electroencephalogram. The clinical effects will be reported in another study.

One of the important problems arising from the present study would seem to be that of determining the outcome, both as regards behavior and as regards electroencephalograms of these cases in which abnormal potentials have been detected early in life. It would be important to know if abnormal potentials

of the type described here might be of any prognostic significance concerning behavioral defect in the subsequent development of these children.

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## PSYCHOANALYTIC OBSERVATIONS ON THE AURAE OF TWO CASES WITH CONVULSIONS\*

IVES HENDRICK, M.D.\*\*

THAT INDIVIDUAL EPILEPTIC SEIZURES are sometimes precipitated by an anxiety attack is a fact which has interested many, and has been the subject of special study by F. Fremont-Smith (1), Rows (2), and others. These studies have shown the frequent sequence of emotional experience and seizure. But the relationship of these auras to pre-epileptic anxiety attacks, and to the basic psychoneurotic disturbances which produced them, has not been adequately studied. The reason is that the most critical emotional experiences in the past history of the individual are often subject to complete amnesia and cannot be demonstrated by interrogatory methods. This obstacle in psychological investigation has been overcome in a few cases by the method of psychoanalysis.

The facts disclosed by psychoanalysis consist of previously forgotten memories, and a large number of interrelationships between these memories and fantasies, dreams, details of behavior and symptoms, and emotional reactions during the analysis. These data are voluminous, as they include all that the patient reports and does during five treatments a week of an hour each, over one, two, or more years. Many details when considered as isolated facts do not seem relevant, but are illuminating when their relationship to the total picture, and their recurrence in typical forms, is evaluated.

There are, however, inevitable defects in a report of psychoanalytic data which cannot be avoided:—it is only possible to present a fragmentary and somewhat arbitrary selection of the available material; the number of cases is limited by the great amount of time expended in the analysis of each individual; no single analysis can be exactly reproduced for another observer; and the constantly fluctuating emotional nuances which are the analyst's very crude, but essential, yardstick of emotional value, can never be transcribed. It is also impossible for the reader, without clinical experience in the use of psychoanalytic method, to share the observer's perspective. Nevertheless, our data are so clearly relevant to the whole problem of the etiology of epilepsy, that we are reporting them in spite of these drawbacks from the standpoint of quantitative and controlled methodology.<sup>1</sup>

This paper is a condensed report of psychoanalytic data showing certain determinants of the pre-convulsive auras of two patients, and their relationship to the neurotic conflict prior to seizures. The grand mal seizures of the first case were typical "idiopathic epilepsy." Those of the second were accompanied by loss of consciousness and amnesia, but the symptomatology was unusual.

\* Read before the Boston Society of Psychiatry and Neurology, March 17, 1938.

\*\* Boston.

<sup>1</sup> For a more complete account of the psychoanalytic method, cf.: Hendrick, Ives, *Facts and Theories of Psychoanalysis*, ed. 2, Chapter VIII, 2nd ed., Alfred A. Knopf, New York, 1939.

of the type described here might be of any prognostic significance concerning behavioral defect in the subsequent development of these children.

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## CASE I

*Personality:* The first patient was a married American man, twenty-five years old when he sought psychoanalytic treatment because of his fear of a compulsion to seduce girl children; and because of failure either to complete his education or to be satisfied with artisan-work. He was treated by psychoanalysis from January, 1935 to December, 1935, and from October, 1937 till April, 1938. He was the only child of severely neurotic parents. He had been frequently whipped in a brutal manner by his father for masturbation, for crying, and for almost everything else he did. His mother had been as possessive and blind to the essentials of his welfare as his father had been violent. In childhood, other boys repeatedly fought over the issue of making the other team accept him; in adolescence, boys bet their sisters he could not be sexually attracted. These are two characteristic examples of the constantly recurring "beaten-dog" experiences of his whole life. He was subject to paroxysmal crying spells, and occasionally had violent tempers against his mother, and later, his wife. He failed generally in his school-work, and had left school at sixteen. But occasionally he won a victory, the most important of which was his persistent courtship of a pretty, feminine, and stable girl, whom he married when he was twenty. In marriage, he was sexually active, but otherwise he was babyish and financially dependent upon his wife. Masturbation accompanied by peculiar rituals was continued. In contrast with his scholastic failure, he had always possessed a special skill and ingenuity in the use of tools, which led to opportunities for earning a living as a printer and as a builder of laboratory apparatus. But he scorned such work and struggled, in spite of complete ineptitude for study, to prepare himself for medical school. His life story was a pitiful battle of highly pathological failure and dogged though futile ambition.

*Medical History and Examinations:*<sup>2</sup> In infancy he had much feeding difficulty. Between three and ten he had recurrent

abscesses of both ears, and was operated on a dozen or more times for these, for adenoids, and for tonsils. In analysis, the perpetuation of his fear of father by his fear of surgeons, and by severe nightmares in which he dreamt of being anesthetized, was shown to be a vital factor in his development. He was of unusually small, apparently "stunted" stature. Physical examination showed opaque, retracted eardrums, without light-reflex, and disseminated shot-like glands (posterior cervical). Except for "hyperacute hearing," there was nothing of neurological significance noted in his records.

*Aura and Seizures:* At fifteen he had been startled by the hallucination of a bright light which "forced him" to turn his eyes upward and to the right. During the next two years, this experience was repeated several times, and he became more and more nervous, depressed, and unable to concentrate, and failed in school. At eighteen he had his first convulsion when he had gone to his room after supper. Three months later this was repeated when he was getting out of bed. He was then, in March 1928, observed for three weeks by the Neurological Service of the Massachusetts General Hospital, and diagnosed "migraine, epilepsy." During the next four years he had infrequent seizures, but there were at least six during this period. He had a complete remission for six years, and then had one during the time he was being analyzed. I have no report of seizures witnessed by a physician, but the history from several sources is consistent. There was complete loss of consciousness; he was at first limp, then thrashed about with violent jerky movements, described by his wife as those of "a chicken with his head chopped off." He foamed and bled at the mouth and bit his tongue. After the convulsion, he would walk restlessly around, was semi-conscious for half an hour, and had a severe headache. Several attacks came on during sleep. These seizures were usually preceded by the hallucination of blinding light which he had first experienced two years before their onset. He, himself, had believed the seizures were caused by "the light."

*Psychoanalytic Data:* During analysis,

<sup>2</sup> Records of Massachusetts General Hospital, Boston, 1928, and Boston Psychopathic Hospital, 1934.



the patient at first described this aura as a great ball of light which appeared before his eyes and blinded him. Later he described it more exactly as a distant spot of light appearing upwards and to the right, which grew rapidly as it rushed towards him. After six months more of analysis, he added that it had been many-colored, and finally realized that the colors were prismatic, like that he had seen somewhere refracted by glass. He finally recalled that during his second year of high school he compulsively watched lights of identical colors playing on a vase on the sideboard in his dining-room. He was then able to recall fragments of emotional crises, associated on the one hand with this compulsion, and on the other hand with acute sexual problems of this period of his life.

At fifteen he had fallen in love with his history teacher. One factor which had made her of unique importance had been his ambition to emulate his father's avocational interest in history, and consequently to perform remarkably in this teacher's class. But his class work and his homework had both been disastrously disturbed by erotic fantasies about her. He remembered that on one evening when this tension was high, he could scarcely keep his gaze from his mother, who could be seen through a partially open door between the dining-room and kitchen. He was trying not to have similar sexual thoughts of her. When he did look at his mother, the lights from the vase on the sideboard came from the same angle, above and to the right, as the lights in his subsequent aura later did. The details of these memories showed that the compulsion to look at the prismatic lights was a compromise between his need to indulge in sexual fantasy, and his need to look away from his mother when erotically preoccupied. He recalled that on one evening when he was trying to study he wanted to get to his own room to masturbate, tilted on the hind legs of his chair to get her out of the field of vision and fell over backwards. This puberty problem had been intensified by a further event. His mother had had an abdominal operation. One evening she called both him and his father into the kitchen, and eagerly exposed to them her

suprapubic incision. The patient had great difficulty in recovering this memory, but finally recalled his anxiety on this occasion, and associated it with the emotion preceding his own operations in childhood. These in turn were closely associated with an experience when he was four:—he had crawled under the skirts of an adult woman and seen her genitals. This recollection was also always accompanied by anxiety during analysis.

The hallucination of light seemed a vestige of this pathological sexual crisis at puberty involving compulsive gazing, erotic tension, the avoidance of incestuous thought, and the repeating of the crucial anxiety associated with his accidental sexual observation at four. It was impossible for the analyst to establish accurately the chronological relations between the abnormal embarrassment during recitation, falling over in the chair while studying, the desire to look at his mother through the door and the consequent compulsion to gaze at the lights in the vase, his mother's sexual exhibition, and the first hallucination of the light. It is not entirely clear whether they represent different fragments of essentially one critical experience, or different episodes in an emotional conflict which lasted for weeks or months. However, the close emotional and chronological association of these experiences, and their dynamic relationship with intense anxiety and the hallucination was shown in many ways. The amnesia for all these events, and the difficulties experienced in resolving it by the work of psychoanalysis, also attest their subjective importance.

This inference was confirmed by the close relationship between the single seizure during the period of his analysis and the emotional repetition of this period of his life. This occurred while he was asleep, and had awakened his wife. For several weeks afterwards, he saw the lights occasionally. A few weeks before, his mother had again had an operation, this time on her tonsils. During the weekend, she had insisted on talking to him about it. He had become sexually excited and irritable, associating it with her exhibition of her abdominal scar years before. A few days later he told me

that, after a laboratory period in a biology course he was taking, he realized he had spent the period making a meticulously exact picture of the pigment spots on a frog. He had suddenly realized that he had done this because although he had been assigned the task of drawing the inside of the frog's mouth, every time he looked in the mouth he thought of the abdominal scar his mother had shown him. In the two weeks intervening between this experience and the seizure, the patient had great difficulty in writing a theme for psychology class on the subject "Sex Crimes." His bibliographical material duplicated his own fantasies, especially those of peeking and dressing in a girl's clothes. The evening before the seizure, he had spent in great turmoil trying to overcome an inhibition to complete this theme. After the seizure, he had paced the floor in a semi-conscious, fearful stage, which he identified during analysis as exactly the feeling he had before his operations. On the day he reported the seizure (a week after it occurred) he had spent most of his laboratory period trying by indirection to get the instructor to make a mid-line incision on his frog for him. He was reminded of his mother's scar, he "felt like the frog," he wished to be a great surgeon. He had been inhibited in playing the surgeon to the frog, because the incision reminded him of his mother. He then began to devote much time to wheeling money ostensibly for his education from an uncle. When he got it, he spent a considerable fraction on the "Five Foot Bookshelf," but never read it. He constantly associated his ambition to read these books with his father's set of history books, the same ambition which had made the history teacher of special importance at puberty. This period of analysis terminated when he had spent hours repairing a hat-rack in the analyst's hallway. The fantasies which motivated this conduct were that the hat-rack could not stand up without his help, that he wished the analyst were as helpless as the hat-rack, and that by repairing it he would create an opportunity to invade the analyst's living room where he fantasied a woman would be sexually exposed. Thus, the emotional cur-

rents of the period during which the last seizure occurred, centered in the mother's again exhibiting her operations, the fantasies of the frog's mouth and cutting its belly, the need to create a peeping-tom opportunity in the analyst's office, reading of perversion, and the ambition to study history like his father. Their execution was pathologically inhibited, but they duplicated the dominant trends of puberty at the time of his first hallucination and were representative of urgent emotional needs of his life at this time.

#### CASE 2

*Personality:* An unmarried man of twenty-seven had failed in business and social life for four years as a consequence of peculiar seizures. His mother was very religious, extremely neurotic, frequently under the care of physicians for many medical ailments, and several times in mental hospitals. His father was a self-made Jewish immigrant, very successful in business, community leadership, and politics; but all his family, especially the patient, were in terror of his unyielding domination and violent tempers. The patient had three siblings, a brother one and a half years older, who was his ideal, a sister two years younger, who was the only girl after puberty he was ever genuinely in love with, and a brother ten years younger. The patient was regarded as "sickly" in infancy and childhood. Although his mother had insisted he was a weakling, unfit for boyhood games, and tried to cultivate the child's pity for her own ailments, he was an active participant in childhood play until he was ten. He had formed very tender and lasting attachments to his school teachers, and had a brilliant scholastic career. He rejected most sexual activities of adolescence. His psychic impotence was nearly complete, except with prostitutes. He avoided every Jewish girl for whom he had erotic or affectionate feelings, but acted towards and thought about gentile girls as he did towards prostitutes. He consciously made the philosophy "money is power" the substitute for sexual striving. His greatest ambition was to be a brilliant salesman; but he failed in this when he entered his

father's business at twenty-two, one year before his seizures began. He had many other symptoms, including a water-phobia since infancy, a gonorrhea-phobia, transient beliefs that his food was poisoned, and a compulsive need to cheat and to attain his ends by lying.

*Medical History:*<sup>3</sup> The patient had been known as a sickly child, was very finicky about food and had many feeding difficulties in infancy and childhood. His history included most common children's diseases, two tonsillectomies, submucous resection at fifteen, and mild hay fever, Spring and Fall. He had been unconscious for a few minutes when angrily struck on the head by a book in 1927. He had many physical examinations, and thorough laboratory study in 1933. At that time one doctor noted slightly irregular and sluggish pupils, positive von Graef's and Moebius' signs, very slight tremor of fingers; thyroid palpation was negative. Many basal metabolisms were below normal, usually -10 and once -25. Blood-calcium was consistently low (10.12 mgm. per 100 cc.). Encephalogram (1933) showed "no air on right side," "no suggestion of neoplasm." The cerebrospinal fluid contained 2.6 cells per c.mm., but was otherwise negative. In 1935, slight narrowing of left palpebral fissure was noted, and very questionable facial asymmetry. Ossification of long bones was imperfect. Blood and spinal Wassermanns were negative. The positive laboratory and physical findings were not considered sufficiently definite to be of etiological significance.

*Aurae and Seizures:* The seizures were unusual. They were diagnosed by neurologists as "epilepsy, petit mal, with automatisms," and "of psychogenic origin,

more like hysteria than true epilepsy, primarily acute attacks of anxiety." The first symptom, which appeared four years before analysis began, was an involuntary clapping of his hands when summoned by his father. Soon afterwards, such automatisms as smacking his lips, making clucking sounds, and rolling his palms together developed. During the following year, more complete lapses of consciousness, with flushing and peculiar immobile grimaces of the face, and more and more complicated automatic movements developed. These movements were of many types and no two seizures were alike in this respect. A composite of the most common symptoms observed by me would give the following picture. The seizure generally lasted from one-half to one and one-half minutes. The patient would suddenly cease talking, his face became immobile and flushed, he would sit up, smack his lips, make licking movements with his tongue, and snap his fingers. Occasionally, he would then walk around the room. But usually he would curl on his side, often in a foetal position, making torsion movements which suggested uncontrollable laughter. He would then stare at my eyes, continuing his mouth movements, and his face would assume the expression of a grotesque, scornful, leer. He would then stretch his arms and sigh. From the moment of onset he gave no indication that his usual conscious mind was functioning; he did not respond to questions except occasionally by slowly turning his gaze to me. After the seizure he was apathetic, but oriented and able to talk intelligently. He knew he had had a seizure, could generally recall the events preceding it, but remembered almost nothing which had happened during the seizure. Occasionally he recalled that when he had looked at me, my proportions seemed distorted and that he saw double. After many observations, I had the impression that there was some basic neurological pattern underlying the seizure which was difficult to describe because of its concealment and distortion by the more obvious and variable pantomimes. These stereotyped features seemed to be lying on the right side, hyperflexing his knees and thighs, semiflexing his elbows rigidly while

<sup>3</sup> This case was very thoroughly studied, prior to psychoanalytic treatment, by Dr. Mesrop A. Tarumianz of the Delaware State Hospital, Wilmington; Drs. Bernard Alpers and Laurens Smith at the Institute of the Pennsylvania Hospital, Philadelphia; and by Drs. Stanley Cobb and Frank Fremont-Smith at the Massachusetts General Hospital, Boston. The studies included long periods of hospital observation, repeated neurological and psychiatric examinations, and laboratory studies including serial basal metabolisms and encephalography. I am indebted to these physicians for their permissions to use the reports of their studies and diagnoses.

moving his arms from the shoulder in somewhat rhythmic fashion, so that his hands approached and receded from his mouth, while he made various suckling movements of lips and tongue.<sup>4</sup>

An *aura* preceded these seizures by one-half to five minutes. Sometimes he had the *aura* without a seizure. The usual *aura* was a distressing epigastric sensation, described as a "shuddering" feeling, or "trembling," sharply localized in the epigastrium. During a part of the analysis, he also described a new *aura* as a feeling of hotness going through his body and ascending to his head; he eventually described this sensation as identical with that following intravenous injections (calcium lactate) by a former physician whom he regarded with great affection. In the early months of the analysis when he experienced the abdominal *aura*, he would exclaim "Watch me!" in an exultant tone, as though about to do something of which he was inordinately proud. He would brag about "how big" a seizure was. Many remarks sounded as if he were actually able to control the onset and character of the seizure, for example, "I have never had such good attacks for anyone else," "I never did that for him."

This *aura* does not duplicate the relationship of visual hallucination to visual perception under a specific emotional situation which our first case showed. This *aura* is of a different type; it is not hallucinatory. The sensory experience of this individual was identical with those epigastric sensations which form a part of the total subjective experience of conscious acute anxiety. The patient had himself described it as "like fear," "like I feel in the dentist's chair."

*Psychoanalytic Data:* This patient was psychoanalyzed, five hours weekly, from September, 1935 to May, 1937. Like the first case, he had experienced a severe anxiety attack prior to the onset of symptoms. It also was of such severity that the memory of its occurrence had been repressed until recovered after three years of psychiatric treatment and fifteen months of psychoanalysis. He then had a dream in

which he was passing a certain street corner. The next day he recalled vividly that a short time before the onset of his automatisms, he was passing this very corner on a Saturday night and was overcome by severe panic and inability to get his breath. He could not proceed for several minutes and then hurried to consult a physician. The intensity of this experience is indicated not only by the amnesia it underwent, but also by his inability subsequently to recollect that he had remembered it once very vividly.

As with case 1, the memory fragments do not permit a perfect demonstration of the relationship of this pre-convulsive anxiety attack to its immediate precipitating causes. Nevertheless, an abundance of other material provides some valuable clues as to the probable subjective stresses of which it was a climax. First of all, this dream and memory occurred during a period of the analysis when the patient had been recognizing that certain details indicated violent enmity for his father. For example, he had dreamt that he himself was running a "reorganization sale" of the business because his father had died. He dreamt and had fantasies that he was making the speech at the fiftieth anniversary celebration of the business his father had made at the twenty-fifth. And he also had attempted to assist his father's chief competitor by sending him suggestions for an advertising campaign.

In the second place, this anxiety had occurred at a time when the patient was under constant stress. He had since puberty largely renounced active sexual life, and consciously centered his whole ambition on the plan of duplicating his father's business success. He had at last completed college and entered business. But here in his daily contacts he encountered again the two chief stimuli of the chronic anxiety which caused his failure. These were

<sup>4</sup> Similar movements occur during hypoglycemic shock and in the convulsions of marasmic infants.



his father and his sister. The fear of his father's tempers was only equalled by his need to please him. In consequence he had failed as a salesman, and been put in charge of advertising to get him away from customers. He had repressed and rationalized this tragic failure. His sister augmented the tension as she was the unwitting stimulus of his strongest and most pathological erotic feelings. When he saw her in a bathrobe, it instigated a tirade of abuse. He endeavored to promote her relations with a man he knew to be impotent, but got a more favorable suitor out of the house. His chief relief from this stress in his daily business life had been an habitual Saturday evening routine. He would dine with an older man who was loved by him like an ideal and affectionate father; at ten o'clock he would join a younger profligate friend, and enjoy intensely this man's sexual philandering at second hand, though he made no advances of his own to the girls in the party. It was while on the way from the usual Saturday night dinner to join the other man that the severe anxiety attack had occurred.<sup>5</sup> Between this attack and the onset of symptoms, the patient made one desperate effort to escape the unsolvable conflicts his business life evoked. He became formally engaged, with the approval of his father, to a girl he would not even kiss. A few months after the development of symptoms, the engagement was broken.<sup>6</sup>

<sup>5</sup> A plausible but unproved conjecture as to the cause of the patient's anxiety on this special Saturday night is that his plans on this occasion would have involved a sexual situation he could not evade; possibly the attempts of a particular woman to seduce him which he was assiduously avoiding at this period of his life.

<sup>6</sup> This detail illustrated clearly the difference in conclusions to be reached from the data of thorough psychiatric examination, and the method of psychoanalysis. Conscious memory material had indicated that this betrothal was the chief psychogenic factor in the onset of symptoms; but analysis of forgotten experiences showed that the betrothal was actually

The third type of relevant data were those which showed that, although the pre-convulsive anxiety attack had been the most severe, and had had the most crippling consequence, it was itself the climax of a series of anxiety crises of a psychoneurosis which began in infancy. From the memories of these, we learned that, however variable in symptomatology and external circumstances, the precipitating cause of all was a thwarted desire to exhibit himself in some sexual way to a female. Before the age of five, probably when three, his mother's aggression was aroused when he publicly urinated at the beach. At four, he had run in terror from his kindergarten teacher when he accidentally spilled a pan of water, although otherwise this teacher evoked no anxiety but rather a deep mutual affection which survived in adult years. The patient had then developed a water-phobia which lasted till maturity. At the age of seven, he and another boy were examining his sister's genitals, and he had an anxiety attack and ran from the room. A great deal of collateral evidence, but not direct memory, shows that the attack was associated with the impulse to supplement observation by exhibition of his penis. Subsequently, his sister was left alone, but he continued similar activities with little girls at school. At ten he had an anxiety attack after a minstrel show which he habitually attended every Saturday afternoon. It was induced by the presence in the audience of a little girl who shortly before had said she did not wish to see him again because of a "dirty" remark he had made to her. She was the object of his emotion, but he had concentrated his attention on disregarding her and looking at the stage. Though repressed, the enduring significance of this incident

one consequence, not the cause, of the emotional conflict which precipitated the seizures.

was shown in several ways. First, on the day of this attack, his habitual ritual of stealing a trolley-ride home, and urinating with a companion in some forbidden place, was renounced. On this one day, he recalls walking a long way home, suffering severely from cold and a distended bladder.

Secondly, these events were recalled in the course of analyzing a seizure in my office in which he had danced before me in a way which he later identified as a burlesque of the minstrel actor. Within a few days, he also unconsciously repeated the childhood situation by attending the theatre with a girl, and concentrating on the stage while refusing to look at her or speak to her during the whole performance. The next day he had a seizure during treatment in which a gesture of the arm was automatically repeated. He later identified this as a mannerism of the leading lady the night before which had especially attracted his attention. Thirdly, following the anxiety attack at the minstrel show, a personality change occurred as definite as that which followed his attack at seven, and as basic as the termination of his career by invalidism following his pre-convulsive attack. This consisted in a renunciation of all erotic efforts and of leadership among boys (except in scholarship and card-playing) and especially in the idealization of his older brother, admiring his aggressiveness and sexual activity intensely but making few efforts to emulate him. This was the origin of an abnormally passive relation to more active older men, such as his attachment to the degenerate philanderer whom he accompanied every Saturday night at the time of the pre-convulsive attack.

These episodes are typical of a great many incidents which occurred before and during analysis. They enable us to reconstruct the crucial anxiety experi-

ences and personality readjustments of the patient's life, and give a much more adequate picture of the subjective conflict of the patient at the time of his pre-convulsive anxiety attack and the subsequent development of his seizures. It was an old problem which had reached a new intensity. The problem was his ambition to be dominant like his brother and father, and especially to exhibit himself sexually. Before ten, he had solved the anxiety attacks these needs precipitated, by phobias and by replacement of mother and sister by females outside the family. At ten and thereafter, he solved it less adequately by renouncing competitive endeavor except in very limited fields, chiefly scholarship and card-playing and by idolizing older, "stronger" men. This pathological but not incapacitating solution was attempted in his Saturday evening relations with the philanderer-friend. But this time, the solution was inadequate. First of all, his drives were of mature strength, and he was of an age when mature achievement was expected by others. He could no longer reconcile himself with thoughts of the future, because actually he was failing in the conscious ambition to become as powerful a business man as his father. Most important of all, he was in constant contact with the two chief stimuli of sexual feeling and of fear; his sister and his father. His final adjustment was complete failure in normal activities, the outlet achieved by his seizures and the necessity of treatment replacing most of the other interests of his life.

#### DISCUSSION

These two analyses, therefore, showed that before the onset of convulsions, both cases had experienced acute anxiety attacks which could not be remembered prior to a long period of psychoanalysis. The aura of the first case was closely associated with the

sensory experience of colored lights in the vase. This perception itself had no objective or emotional importance. The real stimulus of his fantasies and emotion was the sight of his mother beyond the door, and the association of this sexual emotion with fantasies of the teacher and mother's exhibitionism. These fantasies had been completely repressed; the primary stimulus, the women, were replaced by the indifferent one, the colored lights. This had remained the only representative in consciousness of the anxiety-provoking experience and was reexperienced and elaborated in the aura. In the second case, no similar relationship of the aura sensations to perceptual experience existed. Instead of representing a detail of the objective circumstances associated with the anxiety attack, the aura was a vestige of the anxiety itself.

*My conclusions, therefore, are that in these two cases the auras were conscious vestiges of neurotically precipitated anxiety attacks occurring before the onset of seizures, that the repetition of these attacks was inhibited, that in consequence of this, discharge through the central nervous system replaced the discharge of autonomic tension as an anxiety syndrome.* Dr. Alexander Kennedy (7) has come to a similar conclusion from unpublished experimental studies: "In my cases it was possible to induce epileptic attacks by causing the two patients to re-live, under hypnosis, certain key incidents in their lives and the same incidents were thought of immediately before the spontaneous attacks, as an aura."

Critics of these conclusions rightly emphasize that auras of these types are frequent, and are sometimes described by other patients in almost identical words. But the lives of other individuals with similar auras cannot closely approximate the details of the lives of these two cases. The close emotional

association of the first patient's visual aura with the neurotic crisis of which the lights in the vase was a detail does not, therefore, prove a causal relationship between them.<sup>7</sup> Perhaps the optical auras are components of the neurological predisposition of certain individuals to epileptic discharge, and therefore impart to this patient a special sensitivity to the visual aspects of his pre-epileptic experience (and, indeed, his main presenting symptom was a voyeuristic compulsion). Or possibly the psychoanalysis of other individuals with visual auras would disclose a similar relationship between intense anxiety and visual fantasies. These are conjectures which cannot be proved or refuted at present. But the relationship between the convulsions of these two patients and the pre-epileptic anxiety syndromes are definite, and the function of the aura as an aborted tendency to repeat this experience when pathognomic emotional conflict recurs seems probable. This may also be true of the auras of a large number of cases; if so, it is likely that cases without auras have also had pre-epileptic anxiety attacks whose conscious traces have been completely effaced.

The relevance of these psychologic observations to the physiological study of epilepsy is of special interest. The convulsive syndrome itself has always directed attention to the disturbances of cortical function. Studies of cortical circulation, cerebral oxidation, (10) and

<sup>7</sup> The same logical objection can be raised to a conclusion reached by Breuer and Freud in their early study of the psychology of hysteria by hypnosis. (Breuer, J. and Freud, S.: *Studien über Hysterie*. Leipzig und Wien: Franz Deuticke, Ed. 2, 1909. They had shown that the localization of an hysterical pain of the thigh coincided with a sensation experienced by pressure against a bed during a forgotten emotional conflict. Yet there are many other patients who have had similar symptoms. Forty years' experience has confirmed what could not be proved by this observation alone, that the site of neurological dysfunction in hysteria is determined by details of repressed psychological experience.

especially the electro-encephalographic recording of the cortical disturbances during seizures (3, 4, 5, 6) have in recent years extended our knowledge of these aspects of epilepsy. But our psychoanalytic observations indicate the probability that the cortical disturbance itself is initiated by critical tensions of the autonomic system whose discharge as an anxiety syndrome is inhibited. This conclusion means that, no matter how far the explanation of the cortical disturbance, and its discharge through the central nervous system as a seizure, may be advanced by further study, clarification of the relationship of the symptoms to the anxiety syndrome is necessary in order to define the basic etiology of epileptoid convulsions. Further psychoanalytic study will extend our knowledge of the development of the psychoneurosis which was the original barrier to normal discharge of emotional, *i.e.*, psychophysiological tensions. Freud (2) has shown that psychoneuroses are personality adjustments by means of which the organism is spared conscious anxiety experiences, and other psychoanalysts agree that this is a valid generalization of their observation on psychoneurotic patients. The histories of our two cases represent neurotic reactions of this kind during the life of the patients prior to the onset of convulsions. Their anxieties developed when exhibitionistic and masturbating drives became especially intense. Without those conditions which produced the neuroses and culminated in the anxiety attacks, the need for epileptic discharge of these surplus tensions would not have arisen. In order to define the original causes of the seizures in terms of organic structure and function, physiology must explain the neurological-hormonal basis of these anxiety syndromes, the mechanism by which

they are inhibited, and the physiological and anatomical basis by which this tension of the autonomic system is discharged through the central nervous system in the epileptic, or quasi-epileptic, attack. That such a problem of neurophysiology exists is the important point which is indicated by these psychological facts.

Galen's contemporaries, quoted by Lennox and Cobb (8), like our first patient, believed the aura was the *cause* of the seizure. It is exciting to find that their views were almost right, at least for these two cases. We need only modify this by saying it was not the aural *sensation*, but the *anxiety experience* of which the aura is a vestige, that determined the seizures.

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## DISORDERS OF MENTAL FUNCTIONING PRODUCED BY VARYING THE OXYGEN TENSION OF THE ATMOSPHERE

### I. EFFECTS OF LOW OXYGEN ATMOSPHERES ON NORMAL INDIVIDUALS AND PATIENTS WITH PSYCHONEUROTIC DISEASE\*

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COMMENTING on Claude Bernard's statement that "the fixity of the internal environment is the condition of a free life," Barcroft (11) suggested that the organism in gaining constancy of temperature, hydrogen-ion concentration, water, sugar and oxygen ultimately reached a stage of development so that man's higher faculties could develop. It is evident that profound biochemical alterations in the body seriously impair mental functioning. Conversely, mental and emotional reactions have been shown by Cannon (17, 18), Pavlov (36), and others to initiate changes in the organic state of the organism. The relation between psychic and somatic processes has been the subject of considerable contemporary investigation, as shown by the reviews of Dunbar (20) and Fetterman (22). In clinical disease, so-called functional and organic manifestations have often been separately classified but it is doubtful whether this division is as valid as it appears; it may well be that apprehension and hyperchlorhydria in a patient with gastric ulcer proceeds from a basic stem that has branched out into manifestations of both a psychic and physical character, rather

than that the psychic factor produced the physical change or the reverse. Whether this be true or not, our understanding of psycho-pathology must ultimately be aided by controlled studies of the effects on mental functioning of altering basic physiologic processes as well as the study of physiological reactions initiated by altering emotional influences.

Interference with a steady supply of oxygen to the organism has long been known to impair the functioning of the central nervous system. Paul Bert (14) showed that the effects of high altitude were principally due to the lowered partial pressure of oxygen in the inspired air. Since that time the consequences of anoxia on bodily and mental functioning have been studied, at first on high mountains, later in chambers in which the concentration or pressure of oxygen was reduced. The growth of aviation has stimulated additional research on oxygen deprivation in order to determine at what altitude flying is attended with harmful effects. These studies have been extensively reviewed by McFarland (31, 32), and our intention is to refer only to those that form a background for this paper.

The symptoms of moderate oxygen deficiency, which begins after exposure for two or three hours to an altitude of 10,000 to 12,000 feet, may be listed as: headache, dizziness, fullness in the head, parasthesias, impairment in

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memory and judgment. The occurrence of these symptoms, as well as others about to be referred to, led to the proposal that compulsory oxygen inhalation be adopted for commercial pilots flying at altitudes of 10,000 to 12,000 feet and over, based on the opinion that "pilot error" may be in part due to oxygen-want. (Barach 6). The studies of McFarland (33) and Armstrong (7,

an hour at 15,000 feet took twice as long to sight a target, and that firing time was increased and accuracy diminished. Wilmer and Berens (41) studied the effect of altitude on ocular functions and found slight changes between 10,000 and 15,000 feet, and marked changes above 15,000 feet. McComas (30) reported that subjects with latent esophoria saw double between 10,000 and 15,000 feet. Standard psychological tests (including sensory perception) at 14,000 feet showed deviations from the normal after short exposure (Tanaka, 39), (Lowson, 29), (Dunlop, 21), (Watson, 40). In experiments by Barach, McFarland and Seitz (9), exposure to an altitude corresponding to 12,000 feet for three hours resulted in a marked increase in errors in slide rule exercises in three out of four university students. Effort on the part of the subjects was motivated by payment of a small sum for each correct answer. Lack of emotional control was also manifested in two of the subjects. McFarland and Barach (34) compared the reaction of normal individuals to psychoneurotic patients after inhalation of 10 per cent and 12 per cent oxygen. Of a group of 40 patients and an equal number of controls, approximately 70 per cent of the patients collapsed in 10 per cent oxygen (corresponding to 20,000 feet), whereas only 14 per cent of the controls were so markedly affected. Psychological tests revealed a more marked impairment in the psychoneurotic group. The rapidity of exposure to low oxygen atmospheres was shown to exercise a marked influence by Schwartz (38) who made observations on the effect of a rapid ascent to 16,000 feet as compared to a slow ascent. In the former the subjects recorded an average figure of 105 complaints; in the slow ascent only 59 complaints.

Armstrong (4) exposed young avia-

TABLE I  
BUREAU OF STANDARDS  
RELATION OF ALTITUDE, PRESSURE AND OXYGEN  
Oxygen Per Cent

Altitude Feet	Air Temper- ature °C	Pressure mm. Hg.	Temper- ature Constant, 15°C	Stand- ard Atmos- phere
0	15.0	760.0	20.75	20.75
1,000	13.0	732.9	20.01	20.15
2,000	11.0	706.6	19.29	19.56
3,000	9.1	681.1	18.60	18.99
4,000	7.1	656.3	17.92	18.43
5,000	5.1	632.3	17.26	17.88
6,000	3.1	609.0	16.63	16.63
7,000	1.1	586.4	16.01	16.82
8,000	- 0.8	564.4	15.41	16.31
9,000	- 2.8	543.2	14.83	15.81
10,000	- 4.8	522.6	14.27	15.32
11,000	- 6.8	502.6	13.72	14.84
12,000	- 8.8	483.3	13.20	14.38
13,000	-10.8	464.5	12.68	13.93
14,000	-12.7	446.4	12.19	13.49
15,000	-14.7	428.8	11.71	13.05
16,000	-16.7	411.8	11.24	12.63
17,000	-18.7	395.3	10.79	12.22
18,000	-20.7	379.4	10.36	11.82
19,000	-22.6	364.0	9.94	11.43
20,000	-24.6	349.1	9.53	11.05

2, 3) contribute support to this point of view, which has been also upheld by Boothby, Lovelace and Mayo (16). More prolonged exposure leads to nausea, vomiting, tachycardia, slight fever, malaise, and the symptoms originally known as mountain-sickness. From 12,000 to 15,000 feet, these symptoms are more marked, and above 15,000 feet, serious effects are produced in the majority of individuals, in both mental and bodily functioning. A few reports will be briefly referred to. Table I gives the relation between oxygen percentage and the corresponding altitude.

Birley (15) found that pilots after

tors to a lowered oxygen pressure in a chamber, corresponding to 12,000 feet, for 4 hours daily for 6 weeks, and observed the development of symptoms which were similar to those found in "aero-neurotic" aviators, namely, apprehension, irritability, gastric complaints and a diminished sense of well-being. Kroetz (28) has reported in neurotic patients showing vasomotor instability (in the absence of cardio-respiratory disease) a lowering of the arterial oxygen saturation to 88 per cent when a painless arterial puncture brought about pallor and sweating. Hicks (26) found a diminished arterial oxygen saturation in psychoneurotic subjects at rest, in the absence of vasomotor reactions. The findings of Kroetz and Hicks have not been confirmed but they also suggest a relation as yet unclear between anoxia and apprehensive states. Haldane (24, 25) during the War pointed out that soldiers who exhibited the symptoms of "neurasthenia," fatigue and "shock" were apt also to show shallow breathing, fatigue of the respiratory center (shortness of breath on exertion) and exaggeration of circulatory reflexes, suggesting to him the possibility that military neurasthenia was a more lasting form of ordinary fatigue due to oxygen-want. Barcroft, Hunt and Dufton (12) reported that patients with chronic gas poisoning were greatly improved, both physically and in respect to their psychoneurotic tendencies, after one week in a chamber with 50 per cent oxygen.

In studies by Barach and Richards (7, 10, 37) of the effects of inhalation of 50 per cent oxygen on patients with chronic cardiac and pulmonary disease, striking alterations in the mental state of the patients have been observed. Coincident with the relief of acute dyspnea, there is a diminution in restlessness and apprehension, with an increased tendency to sleep. However, in

patients in whom pre-existing anoxemia has been severe and prolonged, the administration of 50 per cent oxygen has at times provoked irrational states, delirium and coma beginning with several hours of treatment. In one case of pulmonary emphysema, relief of dyspnea and cyanosis was followed by the patient lapsing into a coma which persisted for six days. The patient was completely irrational when aroused. At the end of the sixth day he awoke cheerful, rational, and alert. Prior to treatment he had been apprehensive and depressed; following oxygen treatment he was optimistic and unworried, as long as the oxygen concentration in the atmosphere was not prematurely reduced. It is characteristic of patients with severe long-standing anoxemia that a cheerful mental state ensues following the deep sleep or coma which oxygen treatment sometimes provokes. When an active delirium develops soon after oxygen treatment is begun, the patient may be difficult to control but in these instances also continuation of oxygen treatment is followed by resumption of a normal mental state.

In summary, it may be stated that variations in the oxygen tension of the blood both above and below what the organism has been accustomed to may be attended with profound alterations in mental functioning. The purpose of the study to be reported was to observe the effects of inhalation of 13 per cent oxygen for a three-hour period in normal individuals and in psychoneurotic patients, not only in respect to efficiency of intellectual function, such as memory and judgment, but also from the point of view of affective response, mood and emotional control.

#### METHOD OF INVESTIGATION

For the purpose of this study 2 groups of subjects were chosen: the first was a group of 17 medical students

whose average age was 25.5 years, weight 156 lbs., and height 5.8 feet.<sup>1</sup> The second group consisted of 9 patients from the Mental Hygiene Clinic of Bellevue Hospital, suffering from a mild or advanced form of anxiety neurosis. Eight of them had a diagnosis of anxiety neurosis and in the ninth the diagnosis was depersonalization, probably schizophrenia. The average age, weight and height for this latter group was 27.5 years, 150 lbs., and 5.8 feet, respectively.

The subjects were submitted to the following three sets of experimental conditions, observations being made on behavior, mood, speech, and subjective complaints.

- 1) The subject was given a "retention and recall" test (explained below) and then placed in an oxygen atmosphere, the concentration of which was gradually lowered from room air to 13 per cent over a period of from 20 to 30 minutes. The total time of residence in the 13 per cent oxygen atmosphere was 3 hours. Immediately following exposure to 13 per cent oxygen, the subject was retested by the same method.

- 2) The subject was submitted to the same experimental conditions as given above with the exception that he was placed abruptly into an atmosphere of 13 per cent oxygen, without a gradual lowering of the oxygen concentration.

- 3) The subject was subjected to the same procedure as above except that the oxygen concentration was maintained at 21 to 22 per cent. This experiment was carried out on 8 patients and 7 medical students.

<sup>1</sup> The contact with the medical students was limited from 12 to 18 hours. They seemed fairly representative of a city college group, hard-working, somewhat one-sided, and somewhat immature. Most of them had neurotic trends but no more so than in the so-called normal population. For all practical purposes, they were well-adjusted individuals and entirely adequate to serve as a control group.

In repeating the experimental procedure on the medical students, the Rorschach test was given after the exposure to reduced oxygen and repeated after a 4 to 8 week interval.

For all these experiments a portable closed head tent was used. The oxygen content in the tent was checked every 20 to 30 minutes with an Orsat-Binger chemical gas analyzer, the error of each determination being  $\pm 0.2$  per cent. Fluctuations in the oxygen percentage of 0.2 per cent at times took place within the tent. Although an oxygen percentage of 13 per cent, corresponding approximately to 12,400 feet, was aimed at, the error of the method was such as to make it more accurate to say that the oxygen deprivation fluctuated, equivalent to a variation between 12,000 and 13,000 feet, with the average being about 12,400 or 12,500 feet. Occasionally, the oxygen concentration was arbitrarily lowered to 12 per cent or elevated to 14 per cent for only very short periods of time in order to observe changes in reaction. Cooling of the atmosphere was provided by the passage of the gas mixture through an ice tank installed in the tent. The temperature was maintained between 65° and 70°F., the relative humidity between 45 per cent and 55 per cent. The CO<sub>2</sub> concentration never exceeded 1.2 per cent, usually remaining below 1.0 per cent.

Twenty-six subjects served in the experiments, 17 medical students and 9 patients. None was aware of the exact nature of the experiment. Prior to placement in the tent all subjects were requested to listen to one of two stories consisting of 61 to 65 words, selected for the test. They were asked to listen carefully and repeat the story as close to the original as possible and as many times as they could. In evaluating the stories, we tabulated the following items: number of words in each story, number of words omitted, added, sub-



stituted, number of interpositions, perseverations, and also general pattern formation. All subjects were asked to stop after the twentieth retelling. This test gives insight into the psychological forces of saturation and pattern formation according to Curran and Schilder (19). After the experiment, Rorschach tables were shown and the subject was requested to tell what he saw. The same procedure was used in the normal tests.

### RESULTS

There were no differences in efficiency of response to the retention and recall test at the end of the three hour test, between those subjected to abrupt and those subjected to gradual exposure to oxygen want, either in the student or patient group. However, the subjects almost uniformly noted that the gradual onset of anoxemia was accompanied by a sense of well-being, with at times a prolonged feeling of elation and a diminished frequency of somatic complaints. These findings are in agreement with those of Schwartz. Three students described their reaction to gradual reduction of the oxygen percentage, which was the second exposure, as follows:

*Mr. B.:* "I feel different from the last time, you must be giving me an excess of oxygen. I feel slight elation, my legs are not twitching like the last time. Last time it seemed like coming into a different world."

*Mr. K.:* "I don't have a real headache this time."

*Miss S.:* "Last time I felt more dull."

In the 17 medical students exposed to inhalation of 13 per cent oxygen for 3 hours, characteristic complaints were: a mild or severe frontal headache, slight dizziness, yawning, sense of oppression, pain in the joints and epigastrium, tingling sensation in fingers and toes, jitteriness. Changed perception of color was observed in some of the subjects.

Ten of the 17 students (59 per cent) showed shorter or longer periods of elation during which facial expression changed; increased motor activity took place in the form of tapping, singing, whistling and pressure of speech; increased productivity, flightiness, facetiousness, heightened sense of well being were also observed, all of these symptoms resembling the hypomanic state. The period of elation was followed by dullness, drowsiness, and deep sleep, from which the subject could be awakened only after repeated attempts. Awareness of having been asleep was generally absent, and the ability to distinguish between dream experiences and reality showed some impairment. For example, one subject was convinced of having had several convulsive seizures and remembered having been surrounded by relatives and physicians. It was impossible to assure him of the imaginary nature of this experience. Lowering the oxygen content precipitated a short period of elation followed by a pronounced drowsiness and sleep, as illustrated in the subjects' own description:

*Mr. A.:* "It's as if I was drunk. Now it's worn off. I want to sleep. Then all of a sudden I catch myself as if I was afraid for some reason. I feel funny, full in the chest. At the beginning I felt like in the beginning of drinking, I felt like being facetious."

*Mr. S.:* "Either I am getting superabundance of energy or what, but I am getting restless."

*Mr. P.:* "I feel much more clear than when I came. I have had an emotional disturbance for a few weeks. I am happier than when I came. I have not been bothered by any thoughts. I don't seem to think about it at all." The same subject states later: "I feel dizzy, I have a headache, my thinking is dull. I have to read one sentence over I don't know how many times. I want to study, but

my mind seems to be wandering off. I have no thoughts. Don't bother me, I am sleepy."

In the remaining 7 of the students (41 per cent) the period of elation was not observed. Irritability, dullness resulting in marked listlessness and especially poor performances on psychological tests were noted, together with a changed perception of their own body, such as: "My ears seem to pull up," "My head feels big and light." Vague, undefined fears, feeling of strangeness and detachment from the world were frequent. It is best illustrated by the subjects' own description.

Mr. R.: "I feel pretty good, when I look at it all. I feel too good. My voice is notably bad. I should not subject you to hearing me." Then later: "I am restless, my head feels big and light. The light in the room has different color. You look pretty icteric. Things look different. I have not much desire to concentrate much. I sort of feel a little silly, the way one feels when one is hysterical. Subjectively, one feels nothing, semi-detachment, as if you were not completely responsible."

Mr. J.: "I feel like coming out of hypnotic sleep. The hours pass awfully quickly. The world looked strange when I came out, it passed away very quickly."

Inability to concentrate was observed in all cases and was especially marked after two hours exposure to the lowered oxygen concentration.

Mr. S.: "I read the last sentence ten times and I don't know what's all about. I stopped thinking long ago."

Mr. K.: "I have difficulty in reading, my head feels heavy."

Mispronunciations were observed several times. They consisted in omission of letters, as such as "obsinate" instead of obstinate, "olneraly" instead of alternately. Objectively, we observed dullness, lethargy, and listlessness.

Complaints of blankness, apathy and extreme fatigue were especially pronounced after the experiment. Subjects described these sensations as follows:

Mr. N.: "I am awfully darned tired, as if I should climb back and go to sleep, I don't feel like doing anything."

Mr. M.: "My mind is not absolutely clear, I am confused for one thing, I feel a bit dizzy, I can't think as well as I should, I feel dull right now."

Mr. B.: "My mind is in a jumble, I can't think of anything, I got a headache."

With very few exceptions the perception of time seemed to be affected. Three hours were estimated by the majority as two, or less.

In the *patient group* the somatic complaints were essentially the same as in the student group with the exception that they were not as frequent and less pronounced. A great majority of the patients expressed suspicion that some stimulating drug, or ether had been added to the gas mixture. All expressed a fear of death by suffocation during the 3 hour period. Five of nine patients had a prolonged period of moderate or marked excitement, motor restlessness and overactivity with threatening behavior. Extreme overproductivity, lack of inhibitions, and extremely forward and frank sexual advances were made. Sensations of well being, exaggerated self-esteem, and thorough enjoyment of the situation were the most prominent features. Some of the subjective observations were:

Mr. S.: "I am afraid. It's like falling asleep in ether. My breathing puts me to sleep. I see it relieves tension by breathing. Every time you breathe you relax. I will smother in a little while. I feel dizzy. I feel a little sick. I feel cramps right here in my stomach. I feel helpless. I am not master of myself. I shall rip it off. I know I am better than the average. The other patients would

raise Dickens. I know how to stop it. Don't you think I have been analyzed pretty well, I know the ropes. I am getting there. I mean I am beginning to understand the tricks of subconscious. I am feeling better. I am enjoying it. I like it here . . . With you it would be a double pleasure . . . I'll make a good psychoanalyst. I know as much as you do. I feel a little smothered. I have the feeling to rip it open. I bet fellows like me make better psychoanalysts than you or Dr. S."

*Mr. W.*: "The air seems slightly chloroformed. It's like an incubator the generator of loosening of thought. I have the feeling that something. . . This machine is stopping, I think you have to go into it. You and I should be here, we could. . ."

*Mr. B.*: "I am not bashful in the tent. I feel a little happy. I feel like I had a lot of whiskey. I have a headache, the same sort of headache I get when I am drunk. My breathing comes in jerks." (Is told the hour of day.) "Jesus Christ, I thought one hour passed, how quick. I'll miss the tank."

*Mr. B.* (after the tent): "Oh boy, Oh boy, I heard a sound in my head. It seems like a sound going from one side to another. It's like a lot of thin flat lines, pencil lines rising to the sky. It's hard to describe. It's passing very quickly. It's like a cavern when it is quiet. The great silence is worse or almost like a noise. That's the best way I can describe it. I don't fear you, I fear this room less. I feel a lot relieved of the tension. My headache is practically gone."

Four patients did not show any period of excitement. They were irritable, dull and drowsy by the end of the first hour and remained so throughout the experiment.

*Mr. S.*: "Everything seems so distant, so far away. Whatever I try to think about seems immaterial. I try to

think about it, if air were not coming I would not do anything about it."

It must be remarked that no deviation from usual behavior in the above mentioned patients was noted when the experiments were conducted in normal air. After the three hour exposure to low oxygen was over, the behavior of the patients did not differ noticeably from that of the medical students. They were all dull, lethargic and

TABLE II  
NUMBER OF ERRORS IN EACH MEDICAL STUDENT

	Normal Test	After Experiment	Deviation
1.	22.05	59.2	+136.3%
2.	47.9	65.3	+36%
3.	30.5	60.5	+98%
4.	57.0	66.5	+17%
5.	23.4	40.1	+71%
6.	64.0	58.8	-8%
7.	39.0	91.0	+135%
8.	23.6	38.7	+64%
9.	29.4	34.1	+16%
10.	22.8	33.2	+45%
11.	57.2	32.9	+42%
12.	40.2	50.4	+25%
13.	37.0	49.8	+34%
14.	34.5	57.4	+66%
15.	33.0	42.6	+29%
16.	29.5	26.2	-2%
17.	22.9	85.4	+272%

fatigued. The "repetition and recall" test described above has proven to be not only an indicator of purely retentive capacity, but allowed us some insight into the functioning of the individual as a whole, since not only the number of errors but the type of errors and general behavior during the test were significant.

The results of these tests on each subject in the *student group* is listed in Table II. For the entire group of medical students the average number of errors in the control test prior to the experiment was 36.1 while the average after the experiment was 52.5; that is, for the entire group there was 45.4 per cent more errors as a result of the anoxia induced. In 2 of 17 students there was no demonstrable impairment in mental functioning. Our subjects re-

acted to the retention and recall tests as did those of Curran and Schilder (19), who state:

"We come to the conclusion that we deal in our experiments not only with changes in the recall, but also with changes in the organization of traces. Our experiments show clearly that a change in the trace from repetition to repetition does not consist merely of a fading of a trace and the lessening of the efficiency. It occurs in our protocols again and again that words and sen-

TABLE III  
NUMBER OF ERRORS IN EACH PATIENT

Normal Test	Patients after Experiment	Deviation
1. 83.3	29.2	-64.8%
2. 60.9	57.3	- 0.59%
3. 88.7	60.85	-31.4%
4. 80.15	101.65	+26.3%
5. 82.15	74.45	- 9.4%
6. 95.2	48.15	-49.4%
7. 54.85	73.6	-34.2%
8. 63.43	66.71	+ 5.2%
9. 69.75	36.7	-47.4%

tences which were not available at a previous recall become available at a later recall."

Not only was this true in the test under normal conditions, but also after the exposure to 13 per cent oxygen in all groups. We found the first three stories exhibited the largest number of omitted words, these latter reappearing in the later repetitions of the story until a certain pattern was established. This pattern was subsequently maintained with some variation during the remainder of the test.

Our experimental findings are further in accord with those of Curran and Schilder (19) in that our student group exhibited a tendency to replace more complex words with simpler ones before, as well as after, exposure to 13 per cent oxygen. In the patient group, however, we noted a definite tendency to replace simpler words with stilted, formal, and rarely used ones.

We found a considerable difference in rapidity of pattern formation as well as in the type of errors not only between the student and patient groups, but within each group, depending upon whether the test was taken before or after the exposure to 13 per cent oxygen.

The results of the retention and recall test on each subject in the *patient group* is listed in Table III. For the entire group the average number of errors prior to the experiment was 75.41, while the average number after the experiment was 60.96, that is, 19.2 per cent decrease in errors after the exposure to 13 per cent oxygen. On the other hand, in our *student group* we find an increase of 45.4 per cent in the number of errors after the exposure to 13 per cent oxygen.

Analyzing the errors in the student group, we find that the number of omitted words increased after exposure to lowered oxygen. The chief reason for this increase was the number of words added to the original story. The added words are not the result of increased productivity as they express extreme hesitation, uncertainty, perseveration, and confabulation. This latter state is closely related to organic confusion. The retold stories as a whole were hazy, or nonsensical at times. Preoccupation with insignificant details, and elaboration were frequent. A pattern is not established until very late and even then showed a greater variability. Similar results have been observed in serial drawings of a man (Goodenough test) after insulin coma, and Metrazol seizures, where it seemed to be the expression of organic confusion (23).

Analyzing the errors in the patient group we find that the number of words omitted before the experiment was somewhat greater than after exposure to 13 per cent oxygen; furthermore, many more words were added before



the experiment than after exposure to lowered oxygen. This is an opposite tendency to that shown in the student group. The words added by the patients reflect their usual preoccupations with a resultant inability to concentrate. After exposure to 13 per cent oxygen some degree of relaxation was obvious despite the dullness and fatigue which were objectively and subjectively perceived. It will be remembered that in the more severe anoxia produced by inhaling 10 per cent to 12 per cent oxygen, McFarland and Barach (34) found more severe deterioration in psychoneurotic patients than in the control group, with more marked physiological impairment as well. Apparently, the milder degree of oxygen-want used in this study was not sufficient to produce marked physiological changes. In 4 patients, the effect of 13 per cent oxygen was none or only a slight decrease in efficiency; in 5 patients there was an improved response, apparently related to freedom from their usual preoccupations.

The actual results of the "retention and recall" tests upon which we base our conclusions can best be illustrated by recording the following representative series of observations: For these studies we used the following two stories for both groups. When one story was used before the experiment, the other was used after.

1) Weakened by rain, the front of a three story brick house collapsed today. The wall dropped like a curtain revealing Mr. Lester dressing and Mr. Reed in bed. They were the only occupants. "Is it time to get up?" Mr. Reed just asked. The crash came, and Mr. Lester shouted "yes." They were stranded when the stairway gave way, and were rescued by firemen with ladders.

2) Olaf Nelson died here today of burns suffered when a match ignited his grass skirt in a hula dance comedy

during the American Legion Convention. District Attorney Moore lighted a cigarette and tossed the match. Brown interviewed fifteen witnesses who said Moore deliberately tossed the match to Nelson's costume.

#### *Student Group*

*Mr. L. Story before the experiment:* Weakened by rain the front of a brick house collapsed today. There were two occupants, two occupants were revealed. Mr. Lester standing up, and Mr. Reed in bed. "Is it time to get up?" Mr. Reed asked and Mr. . . . Wall . . . then the wall collapsed and Mr. Lester said "yes." The stairway . . . they could not escape by the stairway because that was blocked. The firemen rescued them with ladders.

*Mr. L. Story after 3 hours exposure to 13 per cent oxygen:* Nelson suffered from injuries . . . I think you said . . . well, caused by burning skirt made of grass. I think you said the accident or incident happened on the . . . you said . . . you did not say an Island, you were more specific about it, you said the Island. It happened on the Island of Honolulu. I don't remember if you said at the beach or on the beach . . . the beach . . . or whether the beach came in when the District Attorney charged Morgan. District Attorney charged Morgan. . . . no, District Attorney charged that Morgan was smoking on the beach near by. I know you did not say Nelson . . . you said him. Now next sentence is Mr. Brown questioned 15 witnesses, who said he was smoking . . . who saw him smoke a cigarette, who saw the cigarette tossed at him.

*Mr. B. Story before the experiment:* Weakened by rain the wall of a three story brick house fell down and revealed Mr. Reed in bed and Mr. Lester getting dressed. Mr. Reed asked, "Is it time to get up?" Then a loud crash revealed that the stairway gave way

and they were left stranded. That's all.

*Mr. B. Story after the experiment:* I did not get too much of the story. I don't know much. Some one by the name of Nelson committed a murder, or something. There is something of hula dance. . . . I don't know how it came in . . . and then District Attorney Brown had something to do with the case. He questioned somebody that's all I can make out.

### *Patient Group<sup>2</sup>*

*Mr. F. Story before the experiment:* After the front wall of building or the front part was weakened by rain it collapsed . . . those are not the words. I am rephrasing . . . revealed. . . . I make two sentences of it . . . Mr. Lester. I don't want to say Mr. just Lester, dressing and Reed in bed. Just before it happened Reed asked, I don't know whether asked Lester, or just asked. Whether it's time to get up. I am beginning to think whether they were in the same room or different parts of the building. I don't recall now. Coming back to the story of course if they were in different parts of the building. . . . well . . . story . . . of course would fall namely before Lester had a chance to answer the crash occurred . . . but I'll stick to central idea. I'll have to say they were in the same room . . . greater probability in my mind. . . . They were stranded either when the stairway was blockaded or had collapsed.

*Mr. F. Story after the experiment:* Olaf Nelson died today of burns suffered when the grass skirt which he was wearing during a hula dance which he was doing during an American Legion comedy ignited. Mr. Moore tossed the match after lighting a cigarette. District Attorney Brown after interviewing 40 witnesses, I think . . . I know. . . . all right I think I am making up

some of this . . . said he will hold Brown because he felt that Moore deliberately held the match to Nelson's skirt.

*Mr. S. Before the experiment:* I am sorry, it's hard for me to start. It's a wall that collapsed of a building . . . It's about a wall. . . . I don't recall the details. . . . The last sentence you said one person asked, the other answered "yes" and the wall collapsed. . . .

*Mr. S. After the experiment:* Nelson Olaf died today of burns suffered while his skirt was ignited while he was doing a dance. District Attorney Brown said that he will press charges of manslaughter against Moore, which supposedly ignited a cigarette and tossed the match at Nelson Olaf. There are 15 witnesses that claim that Moore deliberately ignited Nelson's skirt.

In comparing the average results of both experimental groups we find the poorest performance of the student group exhibited fewer errors than did the patient group in their best performance. However, a comparison of performance within each group shows that 15 of 17 in the student group exhibited an increase of errors after exposure to 13 per cent oxygen while 5 of 9 in the patient group showed a decrease.

We have already mentioned that in the student group we supplemented our "retention and recall" test with observations using the Rorschach test. Since the interpretation and scoring of this test is not yet standardized, and considerable controversy still exists about many points, we followed the original method of Rorschach. It must be remarked that a number of the students showed a marked deviation from what is generally considered the normal.<sup>3</sup> The results of the Rorschach test given immediately after production of anoxia as compared with the

<sup>2</sup> The original two stories were used for this group as well.

<sup>3</sup> See footnote p. 56.

results obtained 4 to 8 weeks later, merely show a swing in mood, where each individual follows his inherent pattern.<sup>4</sup>

### DISCUSSIONS

The suggestion has been made that the mechanism of oxygen utilization may be impaired in patients with psychoneurosis (34). The disturbance in affective behavior produced by inhalation of low oxygen mixtures indicates clearly that an accustomed oxygen supply is essential for a controlled emotional existence. Although efficiency of memory appeared superficially improved in 5 of the 9 patients with psychoneurosis, this must be considered in the light of a very poor control; their nervous preoccupations prevented them from attention to the story and interfered with their ability

<sup>4</sup> After the exposure to 13 per cent oxygen, eleven of seventeen students showed an increase in the number of responses, the number of whole answers and the color responses. More kinesthetic answers were given. A decrease in the original answers, less good form, and higher "animal per cent" was noticed. The increase in the number of responses, whole answers, poorer forms and more color responses would indicate a swing to the hypomanic mood. This condition is usually accompanied by an increase in original answers and a decrease in "animal per cent." In our cases we find a seeming discrepancy. If we remember, however, that "animal per cent" is an indicator of the ability to form associations, and the number of original answers represents the capacity to form original associations, we find that this test also shows the dulling effect of anoxia upon intellectual functioning. The state described above, superficially resembling the hypomanic mood, is not accompanied by actual dilatation of personality, but represents merely a state of elation, this being similar to the elation found in alcoholic intoxication and some organic conditions. The remaining 6 of 17 students gave a smaller number of responses as compared with their normal test. Less original answers, less color responses, and increased "animal per cent" were present. The forms here, too, were poorer with the exception of one case. All of the above mentioned findings would indicate a tendency to a depressed state. Here, again, we find a discrepancy. Whereas depression usually improves the perception of form, in our experience the number of good forms showed a slight decrease. It is well to note that on the "retention and recall" test these latter subjects showed especially poor performances, and were found to be exceptionally dull on objective observation.

to concentrate. However, the impairment of those inhibitions which are responsible for emotional control was far more marked in the patient group than in the students. Since the investigator who recorded the actual testing was a young woman, the release of the sexually inhibiting agency was especially apparent. In a previous study (9), release of sexual inhibition was observed by a male investigator working with undergraduate students, although to a much smaller degree. The results of this investigation are in harmony with the previously reported findings of McFarland and Barach (34), the patients with psychoneurosis are more adversely affected by acute anoxia than normal individuals.

The question still remains: is an organic unfitness of the central nervous system in respect to its utilization of oxygen a primary factor in the production of psychoneurosis, or does a disturbed psychoneurotic attitude adversely affect the response to acute anoxia? We mentioned earlier in this paper that a third possibility exists in the interpretation of psychosomatic disease, namely, that the psychoneurotic pattern and an impaired mechanism for handling anoxia may be branches from a primary etiological stem, the exact nature of which is still obscure. We are able at this time merely to state that an accustomed oxygen supply is a requirement for undisturbed mental functioning.

The fact that apparently sane, well-balanced patients with chronic cardiac and respiratory disease may temporarily show profound disturbance in mental functioning as a result of inhalation of 50 per cent oxygen has only been briefly referred to in previous studies (7, 10, 37). It is of interest that headache, which is uniformly present as a result of acute anoxia, is a frequent accompaniment of oxygen treatment in

patients with pulmonary emphysema. When arterial anoxia has existed for a long period and is of marked degree, irrationality and delirium may occur within a period of several hours; in other cases, a slowly deepening stupor or coma may take place, with periods of irrationality when awakened. In some patients, lassitude and mental depression occur without increased sleep. After a period of several days to a week, the mentality clears and the patient generally manifests a cheerful and optimistic attitude. It seems definite that it is the disturbance in the oxygen supply to which the human subject has become *accustomed* that upsets mental functioning.

In human subjects intoxicated by alcohol, Palthe (35) found that inhalation of 100 per cent oxygen overcame to a considerable extent the effects of alcohol. These results have been partially confirmed (5, 8), suggesting that alcohol is at least to some extent an agent that results in tissue anoxemia. In this instance, as in adaptation to low and high oxygen atmospheres, the individual may become accustomed to a certain level of anoxia.

In an experiment on the treatment of dementia precox, a psychiatric ward was kept at an oxygen concentration of 50 per cent for two and a half months (27). No effect on patients with dementia precox was observed as a result of this long-continued exposure to a high oxygen atmosphere; the arterial oxygen saturation in this study was within the range of normal. The male attendants were unfortunately not studied systematically from a psychological point of view but no change in their behavior or attitude was observed. In the clinical experience of the senior author over a period of many years, no mental changes have been observed in patients treated with oxygen when previously existing anoxemia was absent.

#### SUMMARY

The reactions of two groups of subjects, one consisting of 17 medical students, the other of 9 patients from the mental hygiene clinic of Bellevue Hospital, were studied prior to, during, and after exposure to 13 per cent oxygen for three hours. The basis for reaction evaluation was the "retention and recall" test, and in the student group, the Rorschach test as well. In addition, alterations in behavior, mood, speech and subjective complaints were recorded.

In executing the experimental procedure, the oxygen content of the atmosphere was gradually lowered in one instance while in the other the concentration was lowered abruptly to a 13 per cent oxygen concentration. In the former experiment a more prolonged period of elation and a diminished frequency of somatic complaints were observed. Aside from the aforementioned differences, no other alterations were found to exist as a result of the difference in the technique of applying the reduced oxygen concentration.

In the *student group*, during the 3 hour inhalation of 13 per cent oxygen, all 17 complained of a frontal headache; mild dizziness, yawning, sense of oppression, pain in the joints and epigastrium, and tingling sensation in the fingers and toes were frequent. Changed perception of color and of their own body and vague, undefined fears were observed. Inability to concentrate occurred in all cases. This was especially pronounced by the end of the second hour. The perception of time was slower in that the time intervals were evaluated as shorter than actual. Mispronunciations were noted several times. Fifty-nine per cent showed shorter or longer periods of elation resembling the hypomanic mood, followed by dullness, drowsiness, and deep



sleep. The ability to distinguish between sleep and reality showed some impairment. Forty per cent of the group did not show any period of elation. Irritability and dullness, resulting in listlessness and especially poor performances on the psychological tests, were noted. After the three hour residence in 13 per cent oxygen, lethargy, complaints of blankness, apathy, extreme fatigue, sense of estrangement and detachment from the world were observed in a great majority of the subjects.

In the *patient group*, somatic complaints were essentially the same as in the student group except that they were less pronounced and less frequent. A great majority of patients expressed the suspicion that some stimulating drug was added to the gas mixture, and they expressed a fear of death by suffocation during residence in the hood. Fifty-three per cent of the patients exhibited a prolonged period of excitement, extreme productivity, lack of inhibitions, frank sexual advances, sensations of well being, exaggerated self esteem, overactivity, restlessness and threatening behavior. The remaining forty-seven per cent of the patients did not show any period of excitement. They were irritable, dull and drowsy from the end of the first hour, and remained so throughout the experiment.

The *students* made 45.4 per cent more errors in the "retention and recall" test after inhalation of 13 per cent oxygen as compared with their normal test. Errors in the test occurred in 15 of the 17 students. The number of added words accounted for the poor performance. The added words expressed hesitation, perseveration, uncertainty, confabulation, and elaboration—a state closely related to organic confusion.

The patient group showed 19.2 per cent less errors as compared with their normal test. The number of added

words, reflecting their usual preoccupations, was the chief reason for this high percentage of errors in the normal test. In 5 of 9 patients, the efficiency of response was better after inhalation of 13 per cent oxygen. Some degree of emotional relaxation was observed after the exposure to lowered oxygen.

Comparing the performances of both groups we find that the patients made 108 per cent more errors in the normal test as compared to the normal test of the students. Furthermore, the best performance of the patients, *i.e.*, after the exposure to low oxygen, still showed 68 per cent more errors than the best performance of medical students in their normal test. The results with the Rorschach test (13) after the exposure to low oxygen as compared with the test done 4 to 8 weeks later showed only a superficial change. The differences observed indicated a swing in mood. Eleven of seventeen students manifested a hypomanic state without any actual dilatation of personality, that is merely a state of elation. The remaining six students exhibited a tendency toward depression. Reduced ability to form new and original associations was noted. The Rorschach test has substantiated the results obtained by objective observation and by the "retention and recall" test in that every individual follows his inherent pattern. Anoxia merely exposes and aggravates the pre-existing tendency.<sup>5</sup>

<sup>5</sup> Kerr et al. in a recent interesting communication have shown that many psychoneurotic symptoms can be reproduced by alkalosis resulting from over-breathing. (Kerr, Wm. J., Dalton, J. W. and Gliebe, P. A.: Some Physical Phenomena Associated with the Anxiety States and Their Relation to Hyperventilation. *Ann. Int. Med.*, 11: 961, Dec. 1937.) Barach and Striner have investigated the degree of alkalosis which occurs as a consequence of induced oxygen-want and its significance in causing a vicious circle of anoxia. (Unpublished data.) The effects of inhalation of 13% oxygen are not only a lowered oxygen tension in the arterial blood going to the brain and other organs but also alkalosis, constriction of arterioles as *result* of alkalosis, ischemia and thus an aggravated tissue anoxia.

## CONCLUSIONS

Variations in the oxygen concentration of the inspired air, beyond that to which the individual is accustomed, result in marked changes in mental functioning. This disturbance in mental functioning takes place in normal and psychoneurotic subjects exposed to inhalation of *low oxygen* atmospheres, and also in patients with previously existing anoxia exposed to *high oxygen* atmospheres. In the present study, observation of 17 medical students who breathed an atmosphere of 13 per cent oxygen (corresponding to an altitude of 12,400 feet) for three hours revealed marked changes in affective behavior, with impairment of emotional control, in 59 per cent elation and flightiness, terminating in lethargy, and in 41 per cent mental dullness from the beginning. The "retention and recall" test in 15 of the 17 students showed a larger incidence of errors and impaired memory after exposure to 13 per cent oxygen for 3 hours.

The patients after inhalation of the low oxygen mixture revealed an even more marked lack of emotional restraint, with feelings of exaggerated self-esteem and sexual pre-occupations. Their mood ultimately changed from that resembling a hypomanic state to dullness and lethargy. Those patients (4 of 9) who did not show elation at the start were dull and lethargic from the beginning. The number of errors in the "retention and recall" test showed considerable variation before and after exposure to inhalation of 13 per cent oxygen, in 5 of 9 patients being better in the low oxygen atmosphere. The greater degree of relaxation which the low oxygen atmosphere induced appeared to free them from their usual preoccupations, and make for a superficially better intellectual performance. However, in respect to insight, judgment and control of emotions, more

marked impairment was uniformly present than in the student group.

The results of inhalation of 13 per cent oxygen (corresponding to an altitude of 12,400 feet) reveal especially that an emotional release, with diminished reason, memory and judgment, follows exposure to moderate oxygen deficiency for a three hour period, both in psychoneurotic patients and in normal individuals.

The inhalation of high oxygen atmospheres to patients with previously existing chronic anoxia may also produce a profound disturbance in mental functioning. Irrationality, stupor and delirium may take place within three hours exposure to 50 per cent oxygen. When these patients become acclimatized to their increased oxygen tension, the mental disturbance disappears, frequently with the appearance of a cheerful and optimistic mental state.

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## SIGMUND FREUD: 1856-1939

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ON SEPTEMBER 23RD, in his 83rd year, Sigmund Freud, the founder of psychoanalysis, died in London in exile, away from Vienna where he spent 78 years of his life. The final evaluation of Freud's contributions must be left for the future. Like all contributions to science, also his teachings will undergo changes and further development. Certain it is that his influence on general thought, upon medical philosophy and the theory and practice of psychiatry was deeper than that of any of his contemporaries.

Freud, a son of simple Jewish parents was born in 1856 in Freiberg, a small provincial town which at that time belonged to the Austro-Hungarian empire, after the war to Czechoslovakia, and which now belongs to Germany. As a child of four years he went to Vienna and became a leading student in a humanistic gymnasium. After finishing high-school he decided to take up the study of medicine, although in his heart he had the deepest admiration for great writers and artists. It was, in fact, under the influence of reading Goethe's beautiful treatise on nature that he decided to study medicine. Throughout his life, Freud remained faithful to this early inclination. He did not materialize his dream to become a novelist but he opened up for medicine a new field which, before him, was accessible to the intuition of great writers alone—the human personality.

As a medical student at the University of Vienna, Freud did not learn much to prepare him for his later con-

tributions. What he received there was the best medical training that was available. The Medical School in Vienna in those days represented the best traditions of medical science and practice. Hyrtl and Rokitansky were still active in teaching when Freud was a student and later as a young physician he worked in the laboratories of Brucke and Meynert. He became a neurologist with the usual preparation; neuropathology. This he learned from leading authorities. Two of his classical contributions, one on aphasia and one on infantile cerebral palsy date back to this period. He did not remain, however, long in laboratory research. He soon realized the extreme handicaps which in those days a young Jewish physician had to cope with in an academic career and decided to earn his living by the private practice of neurology. Then he discovered how little help his well-grounded medical knowledge was to him in trying to give real help to his patients, who in Vienna, as everywhere else, mainly consisted of psychoneurotics. This was the first time that Freud revealed the makings of a great man. For him this impasse in which conventional neurology found itself was a challenge. He did not follow, as most of his colleagues, the accepted but ineffective pathways sanctioned by tradition and authority. After he realized that anatomy and physiology alone were not sufficient to understand and treat his patients' complaints, he looked for something else or for somebody from whom he could learn more.

Clinical medicine at that time, in

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Vienna, and in Germany, was entirely under the influence of Virchow's cellular pathology. A highly analytic dissecting and mechanistic orientation prevailed, a much more morphological than functional or dynamic point of view. Diseases had to be understood on the basis of local morphological changes in the tissues. The search for pathological structure was the only productive idea in etiologial thought. No matter how one-sided this orientation might have been we owe to it a tremendous enrichment of detailed knowledge about different disease processes. The price which has to be paid for this progress was not little, however. The unity of the organism, which manifests itself in the functioning of the highest integrating centers, that is to say, in psychological processes, has been lost behind the disorganized mass of details.

The first valiant sign of a reaction against this mechanistic and static attitude in medicine came from France. Here a much freer atmosphere prevailed. The interest in psychological phenomena was not considered as a relapse into medieval demonology. In Nancy, Bernheim and Liebault developed a center for research in hypnotic phenomena and in suggestive therapy. In the Salpêtrière, Charcot, the most prominent neurologist of this era, taught and experimentally demonstrated that bodily symptoms can be produced by ideas. Charcot, who also was raised in neuropathology, was a keen observer and a real clinician who was interested, not only in the diseased parts of the body, but in the patient as a whole. As a real observer, he took the current dogmas of prevailing medical philosophy much less seriously than most of his contemporaries. In his search for new information about the nature of nervous disturbances, Freud, who always had a great admiration for the logical clarity of the French, turned

towards France and became an ardent pupil of Charcot with whom he studied on two different occasions. One cannot overevaluate the influence of Charcot upon Freud. There is no doubt that the first impetus to the monumental intellectual accomplishment, which is known today as psychoanalytic theory and technique, Freud received during Charcot's clinical demonstrations in the Salpêtrière.

It is a fascinating task to follow step by step the intricate interplay between keen observations and astute reasoning which gradually led to the understanding of the structure and functioning of the human personality. In this respect the development of psychoanalysis is similar to the development of the fundamental concepts of physics. From certain elementary observations through correct reasoning, conclusions are drawn which open up again a new field for fruitful observations. A sound interaction between reasoning and observation characterized Freud more than anything else as a great scientist.

The first corner stone of his teaching, the concept of the psychogenesis of hysterical symptoms, Freud received from Charcot. Another basic fact he learned in Nancy from Bernheim's and Liebault's post-hypnotic experiments; namely, that unconscious psychological factors may influence overt behavior. In other words, people's actions may be determined by definite psychological motives of which they are not aware in the least. The third observation of decisive importance came from Breuer, a highly respected older physician in Vienna, the only man with whom Freud collaborated after his return from France. Anna, the famous hysterical patient of Breuer, could be relieved from her symptoms after she remembered in a hypnotic state, forgotten emotional experiences of the past and gave violent and dramatic ex-

pressions to emotions which she could not express at the time when they arose. Freud and Breuer called this procedure "cathartic hypnosis"; Anna, the patient who really discovered the method, gave to it the name "talking cure."

It might appear as a series of accidents that Freud had learned in the course of a few years precisely about those relevant observations which contained a clue for the understanding of psychopathological phenomena. There is no doubt, however, that his mind—another sign of his greatness—like a powerful magnet attracted just those pertinent facts which could throw light on the disturbances of the personality.

From these three sets of observations, Freud came to the conclusion that psychoneurotic symptoms are morbid expressions of emotional tendencies which, on account of their painful nature, the patient cannot face and consequently cannot express freely either through voluntary motor behavior or through the normal ways of expressing emotions such as, weeping, laughter, speech and all forms of normal human interaction.

While experimenting with Breuer with the method of cathartic hypnosis Freud discovered one of the most fundamental facts of psychology—that of repression. In hypnosis the patient remembered and expressed painful emotions but, upon awakening, he did not know anything of what he had remembered and expressed so dramatically only a few minutes ago. The conscious personality did not take part in this procedure. It was obvious that the patient's conscious personality could not face the repressed psychological content which came to the surface in hypnosis like a volcanic eruption when the resistance of the conscious personality was eliminated. This resistance, which everyone has, against

recognizing in himself emotions, wishes and tendencies which are unacceptable and in conflict with ruling standards, Freud called repression.

After he recognized this fundamental fact of human psychology the next step, necessarily, was the attempt somehow to overcome this resistance. After long years of patient experimentation he discovered the method of free association. Only gradually did he recognize that in this procedure, apart from the technical device of eliminating the patient's conscious control over the train of thoughts which is characteristic for rational thinking, the patient's emotional relation to the physician was of decisive significance. The patient soon notices that the physician does not evaluate his material as a judge, but only wants to understand it. Thus, he becomes more and more capable of expressing himself frankly. A confidential relationship between patient and physician develops, which Freud called transference, because the patient, in his suffering and helpless situation, transfers to the physician the same trusting attitude which he felt toward his parents as a child. This is the dynamic career of the psychoanalytic process. While using this method Freud became acquainted with a confidential material which no one ever had observed before him. The thread of the patient's free associations went back to dim recollections of early childhood which became gradually clearer during the analytic process. The patients confessed their most intimate feelings, told about their dreams and the products of the free play of their fantasy which they had never dared to verbalize before. In this process of self revelation, sexual impulses played a conspicuous rôle. Freud had no preconceived idea about the significance of sexual impulses in psychoneuroses and was puzzled by the monotonous recurrence

in his patients' material of sexual experiences, fantasies and conflicts. Only painstaking observations of many years did convince him about the significant rôle which sexuality played in neuroses. Then he published his findings and with that he sealed his own destiny as well as that of his teachings. These discoveries are mostly responsible for the universal rejection with which his theories were received. By these publications he challenged the hypocritical attitude of his time towards sex which was shared, not only by the laity, but also by physicians. Thus he became one of the most unpopular figures, the target of accusations, personal attacks and ridicule.

Challenging man's traditional self deceptions, telling the truth about human nature, was obviously not the road to popularity but to an entirely novel and efficient method of therapy. Making his patients conscious about those psychological forces which they excluded from their conscious mind, he gave opportunity to the integrative powers of their rational and conscious personality to make use of the hitherto repressed forces which found expression in neurotic symptoms or irrational behavior. One of his most important discoveries was that most of the repressions originate in childhood when the ego is too weak to cope with the original undomesticated instinctual forces. Repression is the typical defense mechanism of the child's ego. Under certain conditions, when these repressions are too excessive, the repressed impulses seek a morbid outlet in psychopathological phenomena. In classical case histories Freud convincingly validated this psychodynamic explanation of neurotic symptoms. The fundamental principle of his therapy is based on the fact that the mature ego of the adult can deal with those repressed emotions which the child's ego could only re-

press. Therefore, the aim of psychoanalysis is to bring these unconscious forces to consciousness. Then the conscious ego through its integrating power can make productive use of the repressed tendencies which have been drained by neurotic symptoms and thus lost for the conscious ego. By making them conscious, these forces can be domesticated, that is to say, brought into harmony with the moral and social standards and thus enrich those dynamic resources which are available to the conscious personality.

The greatest consternation Freud caused by the discovery of the "family tragedy," the typical combination of love and hate that the small child feels towards his parents and which Freud called the oedipus complex. What the Victorian world would least accept was his statement that the early attachments of childhood have a definite sexual connotation. The careful study of little children has since given full corroboration to these findings.

Because he dared to describe sexual phenomena objectively and in detail he was accused of pansexualism. Yet his pansexualism was nothing but the current view of contemporary biology which like Freud, also postulated two fundamental drives, hunger or self preservation, and sex, or race preservation. Only instead of generalizations or abstractions Freud described in detail all manifestations of the sexual drive, its overt and latent influence upon the emotional life and human relationships.

Because he discovered not only unexpected phenomena but precisely those which man has since ever hidden from himself, he was accused of being a merely speculative mind. Nothing is further from the truth. He was primarily a keen observer. His theoretical concepts are not always clear and consistent. He himself did not consider them of primary significance and

changed his theoretical formulations several times. This, of course, is natural for one who works in such a pioneer field. His first generalizations were nothing but groping attempts in the dark. But his observations and his dynamic formulations are lasting contributions. The facts of repression, resistance, transference, infantile sexuality with its typical manifestations in family life, the unconscious origin of psychoneurotic and many psychotic symptoms, and the principal laws of psychodynamics involved in such mechanisms as rationalization, projection, and over-compensation constitute the solid foundation of normal and morbid psychology and can be compared with the Newtonian laws in physics.

Freud's personal destiny can only be understood in the light of his scientific work. He devoted his life entirely to the development of his ideas and to the improvement of his therapeutic technique. He was about 35 years of age when he began to lay down the foundations of psychoanalysis. But even before that, when he returned from France and reported about Charcot's teaching, he was rejected by his conservative Viennese colleagues. When he made known his findings concerning the rôle of sexuality in neuroses everybody turned against him and even his only supporter, Breuer, severed his relations with him. For ten years Freud worked entirely alone. Then a few students began to gather around him. Among these we see the names of Karl Abraham, Sandor Ferenczi, Max Eitingon, Karl Jung, Alfred Adler, Wilhelm Steckel, Otto Rank, Hans Sachs, Ernest Jones, and others whose names did not become so well known. But not all these pupils could stand the strains of the pioneer life, in this new territory of scientific venture. Some of them took the easier road and, by sacrificing the most unpopular elements in Freud's findings, tried to make them more

palatable to public opinion. Others were driven away by personal ambitions and vanities which are just as common among scientists as among other ranks of people. Among these dissenters are Jung, Adler and Rank, none of whom contributed anything equal in value to the work of their teacher, Freud.

The fundamental principles and findings of psychoanalysis survived these early battles between dissenters which are common in every new field of science. The technique of psychoanalytic therapy became standardized and is taught to psychiatrists in Psychoanalytic Institutes all over the world in a comparatively uniform manner. Also the old feud between Freud and the physicians belongs now to the past. Medical research makes more and more use of Freudian principles and techniques. The effect of emotional factors upon physiological and pathological processes can now be studied by the highly refined and standardized method of psychoanalysis. Empty generalizations about psychological factors such as "emotional strains," "worries," "fears," or "overwork" give place to precise descriptions of those emotional processes which are involved in functional disturbances. In modern hospitals, psychiatrists, physiologists and clinicians are collaborating to understand those psychological and physiological mechanisms by which emotional factors influence bodily processes.

Viewed from a broader perspective the main significance of Freud's contribution to psychiatry consists in applying the principle of psychological causality to the seemingly irrational and unintelligible pathological phenomena. The daily activities and the behavior of a normal person we always explain on the basis of psychological causality. If somebody is sad after bereavement, or is afraid and runs when attacked by a wild animal, or



joyous and proud after receiving a distinction, we find all this natural and can understand it on the basis of the immanent logic of the emotional life. However, if somebody is afraid without being exposed to danger, sad without suffering a loss, joyous and proud without adequate reason, we are puzzled and seek for special explanation. We dodge the issue by calling the person crazy or insane which means nothing but that we think that for him the usual principles of psychic life have no validity. Psychiatry before Freud did not even try seriously to understand those seemingly irrational phenomena by psychological causality but took refuge in brain pathology. Of course both normal and pathological phenomena are founded on physiological processes of the central nervous system. However, normal behavior we are able to understand in psychological terms. Freud's contribution was to demonstrate that the seemingly irrational pathological phenomena can also be understood on a psychological basis. He has shown that the same psychological laws apply to the seemingly unmotivated psychopathological processes just as to the normal ones. He also showed that the semblance of irrationality in neurotic and psychotic behavior comes from the fact that some of the psychological motives are not conscious. As soon as these gaps can be filled out by reconstructing the repressed psychological content, and by making them conscious, neurotic and psychotic phenomena become intelligible in terms of psychology. This understanding of the meaning of psychopathological phenomena by no means solved completely the etiology of all neuroses and psychoses, but, for the first time in medical history, it made it possible to approach them by an etiologically oriented psychotherapy.

The historical significance of Freud's contribution to medicine in general can

be described as a reaction against a too analytic dissecting mechanistic trend which pervaded medicine since the introduction of laboratory methods. Freud introduced a synthetic point of view and it seems that his teachings are becoming the crystallization center around which our tremendous wealth of detailed knowledge will be integrated for the understanding of the organism as a whole.

However, Freud's influence upon our present age cannot be evaluated by focusing attention upon the medical implications of his teachings alone. All those fields which deal with man's relation to man, all the social sciences are receiving a new stimulation from his dynamic psychology.

I believe that times produce the type of great man and the type of knowledge which is needed at the moment. The greatness of a man consists in his faculty to anticipate these needs earlier than others. He is like a sensitive instrument which registers that which is invisible to others. Freud's real significance is that in a time when man's whole interest was directed toward an increased mastery of the external world, he tried to understand man and man's relation to man. He demonstrated that, behind a layer of civilized veneer, man harbors in his unconscious mind a non-social nucleus with destructive impulses directed against others and himself.

We are witnessing today the alarming fact that technical advancement becomes mainly a tool of these destructive tendencies. Psychoanalysis, by its deeper knowledge of man's destructive impulses, may be the antidote against the one sided technical development which threatens to destroy civilization. It may lead to a more constructive social life in which man, by recognizing it, will control his unconscious destructiveness and use his scientific mastery of nature more for mutual help than destruction.

REVIEWS, ABSTRACTS, NOTES AND CORRESPONDENCE

## EFFECTS OF CASTRATION UPON THE SEXUALITY OF THE ADULT MALE

A REVIEW OF RELEVANT LITERATURE\*

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### INTRODUCTION

THE RAPID STRIDES made in recent years in hormonal studies prompted a critical review of the literature dealing with the effects of castration upon the sexuality of the adult male. An evaluation of the present status of the subject may clarify unnecessarily obscure points, and it is hoped, may suggest further lines of investigation. Many authors, in compiling their data about this topic, have observed that medical profession and laity alike share strikingly unsound notions about the effects of castration. This state of affairs has been attributed in part to the traditional uneasiness with which the data have been examined. It is important to emphasize immediately that there is no intention to settle the nuclear and related effects of castration, but rather to set forth the data on castration as derived from the literature. It would seem that today we are really prepared for the first time to make significant studies of the many variable factors which enter into the adequate or altered sexual performance of the castrated person. Furthermore, there emerges no single indispensable component for the attain-

ment of effective and adequate sexual activity, the efficiency of which is determined by a rather complicated confluence of emotional and physiological correlates.

Before proceeding to a formulation of the advances made by the development of the tools of physiological and psychological analysis, an historical perspective is offered.

### GENERAL HISTORICAL BACKGROUND

Castration is a term which has been used to denote removal of testes, or penis, or both together. The exact meaning will be made clear whenever the text indicates such a need. Castration has been practised over many centuries from earliest times up to the present. Tandler and Grosz (29) located a contribution in which it was asserted that castration was known in the Eleventh Century before Christ. Excision was not the only procedure carried out, for the Thlidians or Thlasians of antiquity were eunuchs whose testes were crushed. It was further noted that these people were allegedly capable of coitus. The Bible is alluded to in numerous instances. Herodotus claimed that the Greeks castrated slaves for commercial purposes. Castrates existed in Egypt, Rome and the Byzantine courts, particularly under Justinian. Roman ladies demanded that men be castrated after puberty; the manly form was thus attained, and the capacity for cohabitation spared (Lange, 12). Eunuchs have allegedly made suc-

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cessful sexual advances to women. In fact, it is said that harems were occasionally owned by eunuchs. Of historical interest is Millant's statement referred to by Pierson (20) that during the Sixteenth Century, Amurat III, Sultan of Turkey, inaugurated the custom of amputating the penises of the eunuchs in his harem as a precautionary measure. Apparently, in the opinion of this ruler, simple castration was not a convincing safe-guard against cohabitation. Male captives were often castrated by their conquerors. This barbaric practice has not been relinquished even in our enlightened age. Thorek (30) cites instances of this type and has placed a photograph in his book of an Italian soldier who met such a fate in one of the Abyssinian campaigns. Prepubertal castrates exist today as guardians of the harems in the Orient and at the imperial court at Peking. The other large group consists of Skoptsi, members of a religious sect which originated in Russia several centuries ago, but whose adherents have since disseminated to other parts of the globe. A study of five of its members was made by Tandler and Grosz and will be discussed later in more detail. Canonical law forbade castration although it was tacitly sanctioned to provide the church with male sopranos. Magnus Hirschfeld (see Thorek, 30) claimed that in the Eighteenth Century more than two thousand male children were annually castrated to preserve the angelic elegance of the choir-boys' voices. Operas were written for famous castrate singers, who were much admired and sought in their day. Moore, quoted by Newton (18), has aptly summed up the matter by the remark that the characteristics of eunuchs are amazingly little understood beyond the fact that they reveal vague peculiarities associated probably with the psychological effects of their

condition, the other effects being somewhat of a mythical and traditional nature.

#### FOUR GROUPS OF CASTRATES

This section will be divided into four parts. It will contain a descriptive summary of the observations made by different investigators on four groups of castrates. Castration occurred on various grounds: a) *religious (the Skoptsi)*; b) *sociological (sex offenders, criminals)*; c) *traumatic (war injuries)*; and d) *medical (genital tuberculosis and malignancies)*. Since there was a lack of uniformity in the findings of different observers on the effects of castration within and among these groups, it seemed advisable to study each group separately. At this particular juncture, we can waive attention to the factors which induced or necessitated castration, and occupy ourselves primarily with the results of castration.

##### *Religious Group—The Skoptsi*

Tandler and Grosz (29) studied five Skoptsi and asserted that the peculiar nature of these individuals made a thorough-going evaluation extremely difficult (see also Walter Koch who is referred to by Thorek, 30). The Skoptsi were quite withdrawn and suspicious. Two types were observed: very tall, thin individuals whose beardless faces appeared aged, drawn and lined with furrows; and strikingly fat and bloated individuals with a large bodily circumference increased through the accumulation of fat over the abdomen. The hips and buttocks were particularly fat. The complexion, in both types, was pale yellow despite the fact that these Skoptsi spent most of their days in the open.

The first case was a 42-year-old Russian who had been castrated (testes) at 21. It was observed that the development of the penis corresponded to that

of a 14 to 16 year old boy. Concerning his sexual life, he claimed that he practised coitus daily; the erections were short-lived, ejaculation occurred very rapidly, and the ejaculate was said to be very scanty and watery. The second case was a 35-year-old Caucasian who had been castrated (phallus and testes) at the age of eight. Beneath the mons veneris was a stump of penis 1.5 cms. long whose urethra was observable in the depths of a crater-like contracted scar. The calibre of the penile stump was very small and its size approximated that of a 10-year-old child. No comments were made about this patient's sexual desires or activities. The third case was a 28-year-old Russian who had been castrated (phallus and testes) at 12. The penile stump was 2 cms. long and the scrotal sac was irregularly scarred. No comments were made about sexual fantasies or activities of this case. The fourth case was a 24-year-old Russian who had been castrated (phallus and testes) at the age of five. The penis and scrotum were absent as well as the testes. No comments were made either about sexual fantasies or activities. The fifth case was a 20-year-old Odessian who was castrated (testes) in his tenth year. The penis was similar in size to that of a 10 or 12-year-old boy. During the examination this individual developed a definite erection. Upon questioning, he explained that he had never had sexual intercourse in his life.

Tandler and Grosz were of the opinion that their work, in agreement with that of others, demonstrated with relative certainty that the libido in these individuals (without penis and testes) is not completely extinguished. They also argued that the Skoptsi were allegedly not averse to the feminine sex and that many were capable of reaching the peak of orgasmic pleasure with women.

These cases reported by Tandler and Grosz unfortunately give us very meager data about the personality, various adjustments, and the sexual performance of the individuals described. Consequently, from the standpoint of clinical value, they represent more or less a medical curiosity rather than a source of useful information.

#### *Sociological Group—Sex Offenders—Criminals*

In many states castration has been a common procedure in dealing with sex-offenders, criminals, feeble-minded and insane. The German literature in particular contains numerous contributions to this phase of the subject (Hackfield, 9, Rössle, 26, de Quervain, 3, Sand and Okkels, 27). Many important points are raised for scientific consideration by these studies, but the peculiar nature of the material has put serious obstacles in the way of reaching decisive conclusions. The subjects in general were persons who had come into conflict with the law. As a consequence it was clear that the significant data could have been, and often did appear to be, whitewashed by a special interest in minimizing any anticipated retributive unpleasantness. For this reason the histories of persons in this group are of doubtful value to us at the present time. A further reason for regarding this specific material with caution rests upon the unreliability of data obtained from psychopaths. This comment is not to be accepted as an absolute valuation, but as a workable concept with a high degree of relative precision. A sample of the material (Oberhoffer, 19) will serve to illustrate the above statements.

A 30-year-old barber who had masturbated excessively after puberty and had been guilty of many thefts and sexual offenses, was a chronic alcoholic and experienced great increase of sexual



desire when intoxicated. At such times he often had coitus several times in succession. He requested to be castrated, and later, after making an unsuccessful attempt himself, the operation was performed. He masturbated as before, experiencing equal pleasure, but erections were not possible. At occasional intervals, he had satisfactory sexual relations. Four years after castration (at the age of thirty) there was no libido but there were infrequent sexual dreams. Pollutions continued for a year after the operation, after which they were displaced by watery emissions in the absence of erections and sexual thoughts. While he was still capable of sexual relations, the ejaculation took place several hours after coitus and was accompanied by pleasurable sensations but no erections.

In this case we are dealing with a poorly organized individual who shows impulsive aggressive behavior with psychotic trends manifested by his conscious wish for and attempt at self-castration. The data concerning his sexual performance after castration are somewhat baffling in that he was allegedly capable of sexual intercourse despite erectile impotence. Furthermore, the circumstances under which ejaculation occurred several hours after coitus do not seem clear.

#### *Traumatic Group—War Injuries*

In his monograph Lange (12) discusses the effects of castration upon adult males. His material was obtained from war-pension bureaus which conducted a follow-up of soldiers who received injuries to their genitalia during the great World War. For the most part the information in respect to the sexual function was extremely superficial. The author was aware of this shortcoming but, unfortunately, a further complication arose in that his presentation was often so vague as to

make one feel that the data were either unconvincing or confusing. The value of the contribution lay in the broadness of its scope and the attention it directed to the many determinants to be considered and evaluated in studying the influence of castration in man.

Preliminary reports showed a predominance of failure of potency and libido in the subjects immediately after castration. It was admitted, however, that medical examiners at the bureau often neglected to inquire about the sexual status on the unproved assumption that there was no sexual status after castration. Intimate questioning similarly was avoided lest the castrate suffer "additional psychic trauma." After an extensive weeding out process Lange was obliged to confine his attention to the data in only 141 out of the total 310 cases.

In more than 45 per cent of these utilizable cases, potency was said to have been immediately obliterated. The completely castrated, and those with partial testicular tissue, showed approximately similar results; while the tuberculous group disclosed less frequently an immediate loss of sex function. One-seventh of the completely castrated, and one-third of the partially castrated revealed preserved potency up to the time of the reporting period. Corresponding material was afforded in only one-tenth of the cases in the tuberculous group. Lange asserted that one must realize, however, that the average in this group was older than in either of the two other groups. This was important because those who were in the older age brackets at the time of castration had a less favorable prognosis than the younger ones, while the youngest were worst off. Those castrates were best off in whom castration occurred when they were between 20 and 25; the next best were those up to the age of about 35 years.

At any rate, Lange indicated that even potent castrates were somewhat dissatisfied with their own best efforts. In instances where more definite data were available, it appeared that potency was more or less quickly enfeebled. In fact, the impression obtained was that these castrates were constantly torn between the wish to be accepted by their wives and the fear that their wives might put them to the test.

Libido, on the other hand, was often still present when the capacity for cohabitation had vanished or been reduced to very modest proportions. Many castrates complained bitterly about this incongruous situation which obliged them to seek all possible substitutive measures without the hope of achieving genuine gratification or of making their partners happy. In not a few cases the sexual partner was disappointed. In some cases potency and libido were obliterated entirely. Many lamented the loss of sexual stimuli known to them formerly, and exclaimed that they were strangely unmoved by a passing woman. In his final summary, Lange stated that whereas libido is often present for a long time, and may even be exaggerated, potency suffers very frequently from the start. It can be immediately lost or can gradually reach extinction, but has been known to persist for over two decades. The average duration of potency, however, was not computed.

*Medical Group—Genital Tuberculosis and Malignancies*

The majority of observations made on castrates have been contributed by investigators who studied men who had suffered from tuberculosis or neoplasm of the testes for which orchidectomy was performed. One of the early papers on the subject reviewed an issue which had puzzled early as well as later in-

vestigators. This issue was the phenomenon of increased libido and potency following castration. Melchior (15) described a case of a 36-year-old man who five years earlier had had an orchidectomy for bilateral sarcoma of the testes. Eunuchoid transformations developed and apparently a striking change in the sexual status appeared. Although previously potent, this man was reputed to show a definite increase in libido and potency and described his reaction to castration as a form of rejuvenation. Hammond (10) has also commented on the temporary increase in sexual libido and potency, and has suggested an explanation based on the fact that after an amputation of any kind, e.g., a limb, "there is a persistent feeling as if the digits were gripped in a vice due to changes in the nerve ends, and this may last for years. In the same way, the irritation of the spermatic nerve may set up sexual thoughts and lead to increased desire by reflex action upon the other sexual organs. The possibility of this factor has not been taken into account in operations upon the vas, for the heightened sexual vigour described by Ancel and Bouin after vaso-ligature might be due to a similar cause." Lange (12) observed the heightened sexual response in some of the castrated soldiers whom he studied in his extensive survey.

Feinier and Rothman (6) described the case of a 53-year-old surgically castrated male who at the age of 24 was gonadectomized for tuberculosis of the testicles. He had been married five years and had had three children previously. "Before operation, potency and prowess were poor with a frequency of about once a month. Following castration, while still in the hospital, he noted a return of libido and erections. Subsequently, patient enjoyed his marital relationship more thoroughly and as frequently as several

times a week, with extra-marital experiences in addition. Libido and potency continued for 30 years with but slight decrease compatible with age and the increasing frequency and severity of his headaches. Ejaculations have consisted of but a few drops of 'sticky fluid.' The patient's wife corroborates his greatly improved and continued potency following castration. Review of the history indicates that at the time of the operation he had considerable castration fear with subsequent relief, overcompensation and some Don Juan overactivity and compensatory reaction for his failure in business life, and his previous invalidism. Temperamentally of the emotionally unstable type."

*Laboratory tests:* "Blood count and blood chemistry normal. Blood and spinal fluid Wassermann tests negative. X-ray of skull negative. B.M.R. tests -13, -10, and -20. Male hormone tests (using 2000 cc. urine and capons), no testosterone or androsterone. Female hormone in urine—none."

Sexual reactions like those described above may sound baffling and even paradoxical. However, when we examine further into the emotional factors which influence the individual's capacity to execute satisfactorily the sexual act, we find that a possible understanding of how this may come about is conceivable. The problem of psychic mechanisms involved will be taken up in the discussion.

The majority of castrates do not show the type of reaction described above, but are more prone to manifest either no essential changes in the early post-castration period or some diminution of libido and potency.

As I have indicated in an earlier part of this paper, the findings relating to sexual performance derived from the studies of different investigators revealed a wide variety of responses.

Consequently one is obliged to offer samplings to provide a fairer conception of the actual variabilities with which one is confronted. For example, Pierson (20) described the case of a 38-year-old married man who was examined by him three years after gonadectomy for bilateral carcinoma of the testes. The patient showed no significant physiological changes. His libido was allegedly of the same intensity as it had been prior to operation. He continued to have satisfactory sexual intercourse with his wife twice a week and his sexual pace had been more or less stable all through this period. Another case observed by the same author was a male castrate who eight years after operation showed no changes in potency and libido. Pierson was of the opinion, from his two cases and those reported in the German literature (Falta, 5) that castration of the adult male need not necessarily produce any marked change, and cites Bauer who claimed that the older a man is at the time of castration, the less marked the changes will be. He also raised the question of whether loss of libido and potency are predictable after castration, but was unable to answer it.

McCullagh and Renshaw (14) studied 12 post-pubertal castrates and found that nervous and vasomotor symptoms constituted the most outstanding complaints. "Unilateral castration did not give rise to any symptoms except a temporary diminution of libido in two cases. Complete castration led to nervous and vasomotor symptoms as early as the third day. 'Nervousness,' which was ill-defined and not unlike that resulting from a mild overdosage of thyroid, was noted from three to eight weeks after operation, and there were sudden flushing and sensations of heat or of chilling (vasomotor). These hot flashes occurred as many as four to five times daily for several years, and

tended gradually to decrease in number and severity. Sexual potency (power of erection) and libido (sexual desire) were diminished in all 12 cases. Sexual impotence is not a distressing symptom in the absence of sexual desire. Hence, in the 9 cases in which there was a complete loss of libido, neither partial nor complete impotence was a troublesome feature, but in the 3 cases in which there was a partial retention of libido even partial impotence became a distressing symptom. Orgasms occurred in the cases in which potency was retained, but it is uncertain whether fluid was ejaculated. The knowledge that impotence exists and that it is disturbing normal domestic life has a tendency to be distressing, but psychoneurotic symptoms of any importance were present because of this in only one of these cases." A case reported as "typical of the group" is that of a 33-year-old married man who had had a bilateral orchidectomy in 1925 for tuberculous orchitis. After the operation libido was greatly diminished but sexual potency, although diminished, persisted, and he had been capable of intercourse every two or three weeks. He had a normal climax of sensation and the rhythmic contraction, but he believed ejaculation did not occur. After treatment with androin for a month, there was marked increase in libido and potency, and sexual dreams occurred.

These authors have called our attention to an important clinical phenomenon, namely, the difference in the attitude of the castrate to his sexual potency dependent upon the presence or absence of conscious libido. Again we are obliged to consider this issue at a later point. However, it must be remembered that the person's adjustment to a deficiency may be facilitated if the deficient functioning is not called into activity. Yet we know on clinical

grounds that although some persons have lost their conscious libido and are also impotent, they may be extremely distressed over the combined deficits.

Moore (17) states that male characteristics are not markedly changed, if at all, after post-pubertal castration. The loss of the testes before the onset of puberty, however, may produce modification in these characteristics. In connection with the sexual factors, he agrees that these responses are not entirely under the domination of hormonal influence, and points out that this is true for animals and man. Against the notion that the sexual approach is lost in eunuchs, he cites the work of McCartney who found 10 cases of gonorrhea in a total of 23 eunuchs examined. He also refers to the case report of Rowe and Lawrence who studied a 25-year-old castrate who, following operation, lost his former ambition and activities and became rather lethargic. Nine years later, however, this man became interested in a woman whom he married. This particular experience led to entire satisfaction for the patient and his wife. He apparently took a renewed interest in himself and his vocational pursuits. This type of case is obviously of importance because it emphasizes so simply and directly the fact that deprivation of the testes not only does not prevent sexual congress, but also does not incapacitate the male from active participation in his various interests.

#### THE ATTITUDE OF THE CASTRATE

It is certainly clear that the castrate, by virtue of the loss of his testes, may be confronted with personal and social conflicts which will require a varying degree of adaptation on his part. The particular adjustments which will be called into service will depend upon the nature of his intrapsychic equilibrium,



the interruption of, or special deviation from, acceptable social obligations, and also the various reciprocal interrelationships. These particular considerations will be discussed more at length in a succeeding section.

Most investigators have neglected to penetrate the individual and social implications of castration. Lange (12), however, has given us some interesting sidelights derived from his own studies. He examined the marital status of the castrates. One-hundred-and-two subjects were already married prior to castration. Of the remaining 208, only 53 had stayed single; 155 did not marry until after castration. With the exception of the youngest, the percentage of single persons rose the older the castrates were at the time of castration. Comparing these findings with those of normal people, published in the Annual Statistical Abstracts of Germany for 1932, castrates showed up relatively better statistically than one might have anticipated. The castrate seemed to desire not predominantly sexual gratification but rather comradeship, comfort and tenderness, and above all the opportunity to conceal his deformity from the world. No matter how insistent the castrate was about his difficulties when he was confronting the pension bureau, he wanted to be looked upon as a complete man before the eyes of the world. The wives of these castrates indicated that the sexual relationship played a minor rôle in the marital set-up because they had found that castrates could make good husbands. Besides, in war times when men are scarce, women prefer a castrate to no marriage at all.

In contradiction to his above comments, Lange asserted that sexual needs play a considerable rôle, and that the sexual relationship was successful for a shorter or longer period, but eventuated unfavorably. He believed

that the maternal attitude of the wife made marriage possible.

Some of the complications which influence the security and self-assurance of the castrate may indirectly disturb his potency and libido. For example, since these men cannot have offspring to succeed them in running their farms, etc., they may feel like outcasts. Furthermore, many belonged to the underprivileged uneducated masses and reacted to their castration with the notion that they would be incapable of working and would end their days as imbeciles. It is interesting that these same views on the effects of castration were also held by some of the examining physicians.

The attitude of soldiers who suffered castration was no different from that of soldiers who experienced other types of injury. This observation of Lange's is extremely interesting in connection with the views of other investigators who feel that the site of damage to the body will determine the degree of anxiety which may be released as a reaction to the damage. According to Fenichel (7) the anxiety is especially clear where an operation is regarded as a castration. Thus, it arises more frequently "when the genitalia appear to be endangered, as in genito-urinary operations, than after surgical operations involving other parts of the body" (Fessler, 8). Lange stated that his soldiers were all prone to exaggerate the extent and severity of their damage. The records showed that the castrates repeatedly complained of their loss of capacity for coitus and that they were forced to relinquish the pleasures of marriage. Yet if the castrate married, the reports often enough revealed the reverse to be true. The fact that the decreased potency afforded the opportunity for demanding additional pension had to be evaluated in the study of sexual function of these cripples.

## DISCUSSION

What has preceded has consisted of a review of the literature on castration with the intention of presenting various views of this problem encompassed by different investigators. In broad strokes, the problem has reduced itself to the following proposition: Does castration alter the sexuality of the male, and if this is so, how is this brought about?

- a) In other words, does the removal of the testes interfere directly with the sexuality of the individual because of the interruption of a biological requirement (*i.e.*, castration produces "organic" disease)
- b) or does the castration alter in some way the individual's conception of himself and his attitudes toward his body such that his capacity for normal sexual reactions has been restricted indirectly by the reorganization of his personality (*i.e.*, castration produces a neurosis).

From the evidence at hand it does not seem to be an unfair assumption that castration disturbs the sexuality of the adult on a purely biological basis. Yet the most conspicuous aspect of the problem seems to be the preponderance of psychic or emotional factors which are involved in inadequate sexual function. Furthermore, our information does not justify the singling out of any all-important factor. It suggests, rather, the operation of various related entities, the interruption of any one of which may lead to some disturbance in sexuality.

In the past the term "sexuality" has connoted specifically the execution of the sexual act. It has been found, however, in the last few decades that this notion must include a much broader base. This fundamental extension of

the concept of sexuality has been made largely through contributions of psychoanalysis and of special importance are the intimate interpersonal relationships involved. The genuineness of the elements of love or tenderness combined with the more sensual elements is essential in achieving the highest degree of sexual gratification. If interpersonal factors are disturbed by unconscious emotional conflicts, this may show itself by a disturbance in the execution of the sexual act or in a lack of satisfaction during the sexual act without there being necessarily an awareness of the inadequacy of execution. There may be inadequate sexual execution without the individual's realizing that there is anything disturbing the execution of the act. These unconscious emotional conflicts, which will be briefly mentioned below, often produce very definite clinical evidence of disturbed sexuality, and it becomes essential to analyze and work through these conflicts before there is an improvement in sexual performance (Bergler, 1, Reich, 21). Among sources from which these conflicts may arise are secret fears of injury or of punishment and of concealed hostilities with fears of retaliation. Very deep-seated attachments to parent, sibling, or surrogate likewise interferes seriously with the individual's capacity to express sexual interest in his partner. The unconscious rejection of the masculine rôle, which is a serious threat to his security, may profoundly handicap his sexual performance (Menninger, 16). These resultant disturbances in sexuality are now recognized as purposeful, for the inhibitions produced by the conflict protect the individual against a form of activity which will bring him close to his unconscious conflicts, thereby forestalling the emergence of anxiety which would arise in the absence of the inhibitions. This

protective device (that is, inhibitions) operates automatically and may, and often does, produce the dissatisfaction which causes the individual to seek treatment because of his inability to achieve sexual satisfaction.

Certain types of conflicts of a deep-seated nature which may influence sexual performance adversely have been outlined above. There are other equally important conflicts which likewise may seriously impair the capacity for sexual gratification. These are seen in certain specific attitudes of the individual. If he seeks to achieve some enhancement in his own eyes (desire for prestige or power, or mastery through the sexual act rather than through non-sexual behavior) there will often be a disturbance in sexual functioning. That is, sexual performance is often disturbed when the individual seeks to achieve non-sexual goals through sexual activity. In many instances the sexual act is simply a disguised attack upon the partner which has nothing to do essentially with giving love.<sup>1</sup>

It is probable, however, that of these conflicts and faulty attitudes, the most important single disturbing factor to effective sexual performance is fear. This fear has a very large unconscious component. Its superstructure reveals no obvious connection to the underlying reservoir of fear. When the superficial anxiety and fears of the individual are carefully traced they

seem to be tied up with the notion that some injury will befall him. This anticipation of injury seems to be basically oriented toward or focused upon castration injury. The observation has been repeatedly made that if other factors in the individual's experience and environment are too oppressive for him they may be translated into castration anxiety. In addition, if the individual's personality organization is very infantile, then he may believe that actual castration is necessary to rid him of his fears once and for all. This extremely pathological notion has been sufficiently urgent in some individuals for them to castrate themselves or to seek it at other hands. An example of such a reaction and the only case in the literature, to my knowledge, which has dealt with the analysis of a castrated man was described by Kaufman (11). It was interesting that the castration of this patient was first suggested by his sister and a woman doctor for the "pernicious habit" of masturbation. He, however, eagerly accepted the suggestion as an attempt to overcome his incestuous fantasies, as a punishment for the fantasies, and for the achievement of his feminine identification and passive wishes towards his father. The castration psychologically converted him into a woman. Needless to say, it did not resolve his basic conflicts. This is understandable because the desire for castration arises out of the conflicts. Therefore, obliteration of the emotional conflicts is indicated rather than castration.

How unconscious emotional conflicts and faulty attitudes arise does not directly concern us, but rather, what the mechanism is through which they exert their influence in disturbing the sexuality of the normal individual and of the castrate. We are not fully prepared to answer this latter question be-

<sup>1</sup> H. C. Bingham in "Sex Development in Apes" (2) made some interesting observations about the sexuality of anthropoid apes. He was of the opinion that there were several types of sexual responses: "1) to seek sexual satisfaction, 2) to assume the female sexual position as a defensive measure, 3) to seek to lure an enemy to attack by assuming the female sexual position, 4) to show off sexually in the presence of interested observers." This indicates that even the ape utilizes sexual attitudes to achieve non-sexual goals. Thus, it is not surprising that the human, in his highly complex environment with its conflicting cultural demands, uses sexual patterns to resolve non-sexual aims.

cause at the present time there is not sufficient information available to provide us with an understanding of how these conflicts bring about the physiological changes in man. Although little has been written about the normal sex physiology of men, Semans and Langworthy (28) have studied the nervous pathways concerned with the sexual function in adult male cats. They investigated the effects of faradic stimulation of the pelvic nerves and found that a slight erection resulted from stimulation of the first sacral roots. On stimulation of the second sacral roots bilaterally, strong contraction of the detrusor muscle followed but micturition ceased once erection occurred. Symmetrical erection followed stimulation of either root but was more complete on bilateral stimulation, and erection occurred on stimulation even after section of both internal pudendal nerves. Stimulation of the third sacral path produced a slight erection with vesical contraction. If the aorta was constricted, erection failed to occur even after strong stimulation of the second sacral roots; a continuous flow of blood was found necessary to maintain erection. On stimulation of the sympathetic trunks and hypogastric nerves, the erection subsided and there was contraction of the ductus deferens and emission of prostatic fluid into the prostatic urethra. Emission is produced by sympathetic stimulation, conduction being through the hypogastric nerve. By the term "emission" the authors designate transportation of fluid from seminal vesicles to prostatic urethra, while "ejaculation" means expulsions of the fluid from the urethra. Ejaculation of this fluid occurred on stimulation of the internal pudendal nerves which contain somatic, parasympathetic and sympathetic fibres. Subsidence of erection was clearly a sympathetic phenomenon. Clinical im-

plications of these findings were suggested by the citations to the literature on humans who had undergone presacral neurectomy. Semans and Langworthy have also observed that compression of the venous outflow by the ischio- and bulbocavernosus muscles was an accessory factor in maintaining erection, but that removing the muscles only momentarily eliminated accentuation of erection. Contrary to the popular concept, the venous obstruction is not essential. The authors expressed difficulty in understanding the mechanism preventing regurgitation of fluid into the bladder. Apparently, intravesical pressure was not a factor; the barrier was believed to exist "at the vesical orifice or in the urethra proximal to the colliculus, perhaps in its intrinsic musculature."

This work is of interest because it opens up further channels for investigation, and may be a link in the chain of processes which is concerned with our study. For example, clinically we find in the neuroses various forms of altered sexual responses. These may occur following castration also. There may be difficulty in obtaining an erection, difficulty in sustaining an erection, ejaculation before intromission into the vagina (*ejaculatio ante portas*), premature ejaculation (*ejaculatio praecox*), retarded ejaculation and absent ejaculation (aspermia). Occasionally there is ejaculation without erection. Thus, we see that emotional factors may influence the sexual functioning through various pathways, and it will be interesting to investigate further the significance of this type of response. Certain types of individuals seem to have certain corresponding types of sexual disturbance, although under treatment it is not uncommon to find transitions from one type of disturbance into another.



Since these particular forms of sexual distortion in the neuroses are also seen following castration, the question arises as to whether castration produces a neurosis. It has been mentioned above that a definite answer to this question is still not forthcoming. It may be that the psychic trauma of castration is sufficient in some instances to produce a neurosis in a previously non-neurotic, healthy individual. It is more probable, however, although not proved, that a neurotic character prior to castration is necessary before a symptom neurosis is produced by the trauma of castration. In other words, before we can attempt to settle this issue we have to accumulate a great deal of data about the personality make-up of individuals prior to castration. Freud has said that if the constitutional make-up of the person is poor, then a slight trauma will produce a neurosis, while in the individual with a well-endowed constitution, a correspondingly greater trauma will be required to upset the psychic equilibrium. Because of the lack of quantitative methods in determining constitutional adequacy, intensity of trauma and sexual potency, we are in the sorry predicament of developing hypotheses based on qualitatively derived data.

Other observations bearing upon our problem have been those of Martins and Valle (13) who attempted to clarify the influence of endocrine control upon the musculature of the vasa deferentia, prostate and seminal vesicles of the rat by an *in vitro* technic. They found that spontaneous contractions were rare or absent in non-castrate rats, but in castrate rats spontaneous contractions occurred in 80 per cent of the ducti deferentes tested. These spontaneous contractions were abolished by testosterone injections, but not by estrogens. Both adrenergic and cholinergic substances had motor effects on

the muscles of these organs. The parasympatheticomimetic drugs, especially pilocarpine, caused much greater reactivity in the castrate than in the intact or androgen-treated rats. Investigations by these authors of essentially the same type in sub-adult rhesus monkeys produced results similar to those seen in other species. Thus, comparison of the behavior of the organs investigated showed a definitely greater contractility and excitability of the muscular structures in the castrated animals than in the non-castrate group. These differences were found to persist for even one hundred and thirty-nine days after castration. Furthermore, their figures showed a predominance of rhythmic contractions in the organs removed from the castrate animals. Martins and Valle concluded that the testicle regulated the contractility of the smooth musculature of the accessory genitalia. Its influence is supposed to be humoral. They supposed that if male hormone secretion was depressed, the contractility of the accessory genitalia would increase, and suggested as a working hypothesis to the understanding of pathological conditions such as ejaculatio praecox, ejaculatio tardo, spermatorrhea, etc., that the cause might be in some instances a disorder in the secretion of the sex hormone. Some of their preliminary experiments on these organs *in vivo* tended to confirm their *in vitro* experiments.

These observations are stimulating because they raise further problems for study in the human. For example, they suggest that castration may deprive the executive sexual mechanism of a substance which is necessary for the proper contractility and tonus of the genital musculature. But it does not seem likely that the gonads are completely indispensable because the clinical evidence strongly points to the

fact that a large number of persons manage their sexual adjustment relatively satisfactorily without their testes.

There are many other aspects of the problem of sexuality which are extremely important but which cannot be taken up at this time. For example, the relationship of the physioneuroses to the psychoneuroses; the rôle of repression upon various physiological mechanisms (Eisenbud, 4). Of great interest and worthy of careful consideration and critical evaluation is the work of Reich (22, 23). One of his observations which touches more directly in our territory is his finding to the effect that there is a close relationship between sexual gratification and electrical potential. If the sexual performance is gratifying there is a rise in electrical potential. In the absence of gratification or in the presence of anxiety, there is a diminution of electrical potential (Reich, 24, 25).

#### SUMMARY

Progress in the field of the sex hormones prompted a critical review of the literature dealing with the effects of castration upon the sexuality of the adult male. Following an historical survey, observations of various investigators were grouped for convenience under separate headings. The most extensive studies were made on soldiers who had suffered war injuries. A wide variety of sexual responses, including apparently normal ones, was observed following castration. Biological and psychological factors seem to play a definite rôle in the adequacy of sexual performance. The evidence from the literature did not allow of any final settlement of the problem resulting from castration. However, it was felt that many of the former misconceptions and myths about the effects of castration could be finally set aside,

and that we are prepared to approach these issues scientifically through the coordination of different lines of investigation. The rôle of emotional conflicts and faulty attitudes was discussed and physiological studies that had a direct bearing on our problem were included for consideration. A psychiatric study before, as well as psychiatric follow-up after gonadectomy seemed highly advisable on therapeutic and investigative grounds. This would afford an opportunity to study the specific symptom formations and changes in the distribution of anxiety. Such observations are indispensable for a genuine far-reaching attempt to understand the castrate.

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# PERIODICAL LITERATURE

## General

ALEXANDER, FRANZ: The Logic of the Emotions and Its Dynamic Background. *International Journal of Psychoanalysis*, 1935, vol. 16, p. 399.

Logical thinking is based on intellectual syllogisms. The logic of emotions is based on emotional syllogisms. The logic of intellectual thinking is the result of external experiences. The logic of emotions is the result of internal experiences. Depriving these emotional sequences of their content and devoting attention to the dynamic quality leads to the finding of the direction of the tendencies and is called vector analysis. In the investigation of the psychogenic organic disturbances the great value of this vector analysis could be established. For example, the stomach functions can be disturbed by different dynamic directions: to wish to receive help or love or the wish aggressively to take away something. The same group of wishes may also disturb other organic functions which involve incorporation such as, the inspiratory phase of breathing or the act of swallowing. Other dynamic qualities of similar importance are the eliminating and retentive tendencies. These three main classes of tendencies express fundamental urges.

The equilibrium between these three vector qualities, incorporation, elimination and retention represents the fundamental dynamics of the biological process called "life". The most important equilibrator of the balances between these tendencies is genital sexuality. The voluntary muscular systems and genital activity are concerned in the external policies of the organism in contrast to the vegetative organs which manage the organism's internal life.

M. G.

DEUTSCH, FELIX: The Associative Anamnesis. *Psychoanalytic Quarterly*, 1939, vol. 8, pp. 354-381.

In a recent study of some 40 patients complaining of a variety of symptom com-

plexes, chief among which was asthma, the psychosomatic forces operating in the patients' illnesses were brought to the fore by a technique of associative anamnesis.

There are three methods which were employed previously in the investigation of psychosomatic disease: 1) The clinical examination was made by one examiner, the psychiatric examination by another, and the findings so obtained were then evaluated for their possible interrelations. 2) All the possible emotional experiences were investigated, and their coincidence with the organic disturbance was taken as a proof for the interrelations. 3) Weizsäcker introduced the biographical method in which by naive observation, the behavior and the psychic reaction of the patient is observed.

In the course of the associative anamnesis the patient is stimulated to give all information by describing his organic complaints without making him aware of a psychological background in his illness. The patient is allowed to talk freely and the examiner simply waits, sometimes repeats one point, always tries to use the patient's own words, stimulating him in this way to further associations. The physician is passive, listening, but in a state of concentrated attention. A very helpful question is: "What do you mean?" This kind of interview is based on positive transference and therefore the patient may feel sometimes relieved after the interview.

The patient gives a mixture of emotional and somatic material and the physician has to watch for the descriptions of the old conflict, the recent conflict and the time factors. The interview usually lasts from one to two hours. The patient gives also the material about the main motivations in his life, his reactions to other people with whom he is and was living, starting from the present time, going back to the past.

Some excellent case histories give a clear picture of this very interesting method.

M. G.



DUNBAR, FLANDERS: Character and Symptom Formation. *The Psychoanalytic Quarterly*, 1939, vol. 8, pp. 18-47.

The time is not yet ripe for discussion of the role of character in symptom formation but this problem occupies a central place in the practice of medicine today. Therefore, it seems worth while to bring to focus some scattered fragments of relevant knowledge. The answer to why one patient expresses anxiety in action and another in a neurosis and a third one in organic disease lies probably in the various combinations of heredity and constitutional elements, specific conflicts and the personality organization, plus possible adventitious factors. In the course of the author's investigation of 1300 patients coincidences were examined and observed from the point of view of their relevance to the disease process under consideration. Spontaneous statements made by these patients are significant: the accident-prone patient says, "I always have to keep working. I can't stand around doing nothing. When I get mad, I don't say anything, I keep it in and do something." The hypertensive patient says, "I always have to say 'yes'. I don't know why. I am always furious afterwards." The arthritic patient says, "Everything I do hurts but I have to keep on moving."

Two case histories of patients with angular syndromes are given, published side by side on the page. One had coronary disease, the other one showed no organic damage. These case histories are identical down to the most minute details, yet in terms of such factors as those here mentioned there are important differences. They illustrate also that patients with similar syndromes have important similarities in personality and history, whether or not organic damage has taken place. Emphasis has been laid on the investigation of the character defenses because of its rather general neglect. Some suggestive points may be summarized as follows: most fracture patients and hypertensive patients have a focal conflict over submission to authority and marked hostility. One expressed this in action, the other in an attempt to inhibit action. The one has a jerky type of tension, the other generalized tension involving both skeletal

and smooth musculature. It is possible in many cases to interrupt the accident habit or to bring about a return of blood pressure to normal by the working through of the conflict. Patients with marked syndromes of dyspnoea and palpitation and patients with arthritis show similarities in their focal conflict against which they have developed different defenses, which bear a relationship to their symptomatology.

M. G.

JONES, ERNEST: The Unconscious Mind and Medical Practice. *British Medical Journal*, 1938, vol. 1, p. 1354.

The neglect of psychology in medicine is only partly justified through rational reasons. More important is the simple explanation that physician as well as the patient is a human being and therefore subject to the universal repression and threat of the unconscious. Doctors use the "projection on the somatic." The physician's unconscious influences his scientific views on daily work in regard to etiology, pathology and especially treatment.

M. G.

NUNBERG, HERMAN: Psychological Interrelations between Physician and Patient. *Psychoanalytic Review*, 1938, vol. 35, pp. 297-308.

In order to understand the role of the physician, the author starts with the analysis of the "doctor game" of the children. In this game children master a traumatic experience, gratify their repressed instinctive needs—for instance their curiosity—identifying with the grown-ups and gain the feeling of freedom, omnipotence and omniscience for the duration of the game. The child plays the part of the physician and of the patient, makes himself sick and helps himself. And later on he may become doctor or patient on the basis of the same unconscious instinctive demand. When the adult falls sick he returns to his childhood situation playing the passive role and looking for protection from the parent representative, the omnipotent physician who now, however, is no longer the figure of a game but a reality. The physician himself derives this willingness to protect from his own identification with

his parents. All these considerations give rise to the idea that perhaps it would be beneficial to the patient as well as to the physician if the latter were to be analyzed.

M. G.

### Skin

BARTEMEIER, LEO H.: A Psychoanalytic Study of a Case of Chronic Exudative Dermatitis. *The Psychoanalytic Quarterly*, 1938, vol. 7, pp. 216-231.

A senior dental student, 25 years of age referred by a dermatologist came to analysis because of an itching dermatitis on the dorsum of his right hand which had been present for three years, and started a few weeks after he had become a dental student. The psychoanalytic material makes it clear that the dentistry was to bring the patient gratification of his castrative stealing and sadistic impulses and so he was paying in advance with a rash on his hand. When it first appeared he was having marked anxiety about his abilities. The dermatitis always disappeared spontaneously with every vacation and returned with the patient's return to school. Tearing the lesions with his finger nails corresponded with his fantasies of sadistic intercourse. Irritating the lesion had the same symbolic value as masturbation and as tearing the vagina of a woman. It was at the same time a defiance of his mother's prohibition against masturbation and her insistence upon cleanliness. Already as a boy he had reacted to various anxiety situations with small blisters. The lesion disappeared because it had lost its value as a substitute during the course of the analysis.

M. G.

KLABER, R. and WITTKOWER, E.: The Pathogenesis of Rosacea: a review with special reference to emotional factors. *British Journal of Dermatology and Syphilology*, 1939, vol. 51, pp. 501-524.

A review of the numerous etiological theories of rosacea shows that the riddle of its origin is far from being solved. The present study of fifty unselected patients, a joint effort of a dermatologist and a psychologist, fails to substantiate the gastric and septic origin of the disorder. Most com-

monly the patients attributed aggravation and exacerbation to worry and excitement. Closer examination revealed that 36 patients of the total showed signs of "social anxiety," i.e., their social behaviour was conditioned by fear and anxiety of abnormal degree. This psychological abnormality could be traced back to early childhood behavior, and hence long antedated the onset of the disorder. In two-thirds of the series the onset of the disorder was preceded by some emotional trauma, serious enough to be regarded as a precipitating factor. Problems of social contact and of sexuality were prominent among the precipitating situations. The close relationship between guilt and shame on one hand and vasomotor phenomena on the other is well known. As a heuristic hypothesis rosacea may be regarded as a chronic blush or the Biblical mark of Cain. Three psychopathological patterns repeatedly encountered were described; repressed sexual excitement, repressed aggression and repressed need for attention.

Author's abstract

MONTGOMERY, DR. LOUIS: Psychoanalysis of a Case of Acne Vulgaris. *The Psychoanalytic Review*, vol. 26, 1939, pp. 155-177.

The author reports in detail the case of a woman who came to analysis because of hysterical symptoms. During the analysis of 603 hours spread over a period of 39 months many observations about the psychogenic nature of acne vulgaris, with which the patient was also afflicted, could be gathered. Any conscious desire to be loved by a man was opposed by the unconscious. Defensive measures in the form of pimples on the face were invoked. While the acne condition was a source of intense suffering to the conscious personality, it satisfied the unconscious father identification. The more frantic her efforts to cure acne, the more the lesions increased during a period of many years before the analysis. The remarkable absence of lesions during periods of negative transference and their spontaneous reappearance in each change in attitude to the analyst made an impressive spectacle. During the end of the analy-

sis the acne cleared up completely. The psychosomatic interrelation might lie between the two personalities existing within the total personality: The one, the unconscious figure in its relationship to the inner physiological functions, the other the conscious figure in itself related to the environment. The detailed report about the analysis of the acne as a psychogenic symptom is very well written and convincing for the reader, forms the main part of this remarkable paper, but must be read in the original.

M. G.

### *Asthma and Migraine*

DUNBAR, H. FLANDERS: Psychoanalytic Notes Relating to Syndromes of Asthma and Hay Fever. *Psychoanalytic Quarterly*, 1938, vol. 7, pp. 25-68.

The psychoanalysis of one woman aged 40 suffering for 30 years with asthma and for ten years with hay fever; two men—one 40 years of age, suffering from asthma for 28 years and the other man aged 25 suffering from hay fever for twenty years is reported. The aim of the report is to give new clinical material in detail with special attention to observations of simultaneous sequences in psychic and somatic spheres. The intention is not to relate the characteristics set down exclusively to the syndromes of asthma and hay fever but only to report that they have been found in these patients in quantitative prominence and in specific relationship to attacks. The psychoanalytic material in all three patients shows: 1) disturbances of sexuality involving alienation from the female role in the woman, and feminine identifications in the man. 2) A marked predominance of anal and oral sadistic material, involving sexualization of the respiratory function and great interest in the sense of smell. The predominance of anal material and aggression in the asthmatic cases is so general a finding that it is probably to some degree a relevant coincidence, as is also the general impression that the asthmatic character is compulsive. 3) The development of only a few protective rituals or phobias except in periods of freedom from somatic symptoms. The hostility seems constantly on the point of being carried into action and the patients are in con-

stant terror. 4) There is not only intense hostility and aggressiveness but also a marked tendency to act these out. 5) A weak ego organization with an inadequately assimilated superego, which is further projected and externalized during the analysis, creates a difficult problem in management. The review of literature mentioned besides many other names, Edwardo Weiss who already in the year 1922 remarked that "the asthmatic attack represents at once a reaction to separation from the mother and a cry of appeal to the mother." The author suggests that perhaps the most promising work is in process of being done by Alexander and Saul, also Deutsch and Finesinger.

M. G.

OBERNDORF, C. P.: The Psychogenic Factors in Asthma. *New York State Journal of Medicine*, 1935, vol. 35, pp. 41-48.

The respiratory system as well as the gastro-intestinal system might assume the organic expression of the psychic conflict where the question of in-take, retention or expulsion is concerned. In this way, Alexander's findings about the vector analysis and its approach to the analysis of psychosomatic disorders finds support in this case of asthma. An excellently written analytic case report is given. The emotional conflict of the patient centered about the repressed desire for love from her mother and led to asthmatic attacks. For a certain period of time the asthma disappeared when the patient was able to find an outlet for her emotions in violent outbursts. The analysis revealed a conflict between aggressive masculine and passive feminine tendencies. The respiratory disorder was associated by the patient with masculinity.

M. G.

FROMM-REICHMANN, FRIEDA, Contribution to the Psychogenesis of Migraine. *Psychoanalytic Review*, 1937, vol. 24, pp. 26-112.

Psychoanalytic-experience with eight cases of migraine (two men and six women) has given the impression that they all were patients suffering from unresolved ambivalence; they could not tolerate awareness of their hostility against beloved persons;

therefore they unconsciously tried to keep this hostility repressed, and finally expressed it by the physical symptoms of migraine.

One of the patients, for instance, developed a migraine attack during her analytic hour whenever she felt any criticism about analysis or analyst. Upon becoming conscious of her hostility, the symptom would "melt away." Even a healthy person may occasionally experience an attack of anxiety or hatred by producing an attack of common headache but the migraine patients express with their headaches a deeply repressed hostility against beloved persons—that is they find the migraine is the specific expression of unresolved ambivalences. What are the reasons for the patients' intense ambivalence conflict and why do they feel such a strong need for repressions and why do they chiefly use their heads to express it? The psychoanalysis shows a strong fear of punishment by being deprived of the family's protection (and these patients usually come from old families with a very strong solidarity within the family). Furthermore, the hatred of the beloved persons had such tremendous destructive unconscious aims that their sensitive conscience could not bear to realize it. The migraine patients primarily want to destroy their partners' intelligence and brilliancy, respectively their brain and head, as the concrete representative of their mental capacity. This mental castration must be repressed. The different symptoms of ejection after the migraine attack have the unconscious content that the patients overcome their hatred and the introjected beloved and hated persons are ejected. Five patients became practically cured, two got decided relief as to the number and intensity of their attacks, one remained practically uninfluenced.

M. G.

### *Hypertension*

HILL, LEWIS B.: A Psychoanalytic Observation on Essential Hypertension. *The Psychoanalytic Review*, 1935, vol. 22, pp. 60-64.

The author describes the successful partial analysis of a case with essential hyper-

tension. The patient comes from a family in which circulatory disorder was frequent. He suffered during childhood from a severe but frustrated rage which was probably the precipitating cause of his disability and the reenactment of these experiences in the analysis resulted in the patient's cure.

M. G.

RENNIE, THOMAS A. C.: The Role of Personality in Certain Hypertensive States. *The New England Journal of Medicine*, 1939, vol. 221, pp. 448-456.

Citing case material, the author discusses five groups of patients in which hypertension and personality problems are interrelated. These grade from the group in which there is no true hypertension and the personality plays the predominant role in transient blood pressure elevations, to the group in which a true hypertensive patient becomes converted into a psychoneurotic individual because of superimposed fears and anxieties. The intermediate groups include the type in which long continued anxiety and insecurity give rise to a true essential hypertension.

A study of the personality of these patients reveals lifelong instability as expressed by easy depression and anxiety. They also show perfectionism, great ambition and over-attention to bodily symptoms. The outstanding emotional pattern is resentment, often smoldering and unexpressed. This personality type represents a selected group of hypertensives who were studied because of the obvious role of the emotional factors, and does not represent the personalities of all hypertensives.

Careful physical examination and reassurance is indicated. Psychotherapy includes recognition by the physician, and demonstration to the patient, of the relation between his anxiety and his symptoms. Such patients need training in the proper balance of their work and recreation.

W. W. H., JR.

### *Neurological Problems*

GROTHJAHN, MARTIN: Psychoanalysis and Brain Disease (Observations of Juvenile Paretic Patients). *Psychoanalytic Review*, 1938, vol. 35, pp. 149-164.

Even during the paralytic process the inner life history of the individual can be



understood by psychological methods. The somatic influences cause the personality to react with a mental symptom towards the injury of its integrity. Psychic symptoms must be explained by psychic factors.

Dementia occupies a principal position in the clinical picture of juvenile paresis. The child loses initiative and self confidence and has a forewarning of severe illness. There is in this early stage often a short but severe depression with desperation and anxiety. During the oedipus situation the sickness is accepted as a kind of punishment. In the reality situation at that time the parents begin to withdraw their love and also the teachers change their attitude and every child develops a feeling of guilt in this situation because of his disabilities. The malarial treatment offers the child the first relief. The illness is acknowledged and something is done about it. In this stage there is an opportunity to study the race between the paretic process and the development of the juvenile personality. The prognosis of those whose illness begins after fourteen is better than in younger ones because the final fight with illness is at a higher level. The second malarial treatment is seldom followed by a remission because it cannot impress the patient as dramatic. According to the author's 52 self-observed cases the prognosis is more dependent on the psychological study than on neurological or serological findings. The analysis of the anxiety reactions to the somatic situation is important because there is a "Ralangst". In the adult paretic the superego anxiety is greater and this may explain the fact that the juvenile case seldom shows true psychotic depression.

M. G.

MENNINGER, WILLIAM C.: *The Psychology of Juvenile Paretic Neurosyphilis. The Psychoanalytic Review*, 1936, pp. 76-83.

In juvenile paresis one can see a progressive regression, both of the ego development and the libido distribution. This often begins with some evidence of unconscious insight. This regression takes place most commonly in a simple deteriorative process perhaps because of the immaturity developed ego-ideal. Because of the weak differentiation of the ego-ideal, depression, gran-

diose delusions, and in fact, all acute psychotic symptoms are less frequent. On the other hand, autoerotic manifestations are far more frequent.

M. G.

## BOOK REVIEWS

BILLINGS, EDWARD G.: *A Handbook of Elementary Psychobiology and Psychiatry*, The Macmillan Co., 1939, New York, N. Y., 271 pp. \$2.00.

This sturdy compact volume which can be neatly slipped into any pocket presents authoritatively Adolf Meyer's conception of man in the scheme of life, covering the range of grossly normal to abnormal behavior. The author, thoroughly familiar with the nature of his task, provides the reader with a viewpoint, methodology, and therapeutic technique known first-hand to some, while others have merely done lip-service to its unfortunately ponderous terminology.

Since this book is clearly designed to meet the needs of the beginner, whether he be medical student or non-psychiatrically oriented physician, special attention has been given to the "psychiatric examination procedures." This section is most satisfying because it achieves a pedagogic goal by its splendidly concise handling of the various parts of the mental status examination. Furthermore, it instructs the uninitiated in negotiating the treatment situation with the least possible friction. A definite drawback to this valuable book is the use of terms such as "kakergasia," "ergasiatrics," "dysergasia," etc. These serve no real purpose, have no hand in shedding light on any topic, and are semantically cumbersome. If the reader fails to understand what is before him, the ancient Greeks certainly can bring no aid.

A second drawback emerges from the methodology employed. There is too much emphasis on the "facts" with a neglect of the essential fact of relatedness inherent in all factual situations. Since relatedness is part of every factual situation, it cannot be neglected even if some theorists go to the extreme of rudely jamming patients into their faulty hypothetical schemes. Psychiatry has a double-edged objective in that it must aim to erect a conceptual

system and also a therapeutic system of man founded upon an understanding of the stuff out of which man is made, his potentialities, and his limitations in its broadest sense. As long as the psychiatrist is sufficiently conscientious to examine and test exhaustively his conceptual orientation, he goes a long way toward fulfilling his obligation as a therapist and scientist. If he has an exaggerated fear of being in error, he cannot focus a critical eye on his patients' anxieties any more successfully than on his own.

Despite these criticisms, Billings gives the reader a completely reliable, and highly serviceable compendium which should belong in the library of anyone seriously interested in the subject.

E. S. T.

HENDRICK, IVES: *Facts and Theories of Psychoanalysis*, Alfred Knopf, New York, N. Y., 1939. \$3.00.

Five years have passed since the first edition of this book was published. It was at that time an excellent book and it is now even better because the author succeeds in including the development of psychoanalysis within these years. So youthful a science as psychoanalysis develops much more during a five-year span than the older disciplines, and the extension of psychoanalysis to new fields has taken place only recently. Besides this natural progress, the personnel and its professional organization have been profoundly affected by the chaos in Europe. In America, however, the flowering of a closer relationship between psychoanalysis, organic medicine and general psychiatry has taken place to a much greater extent than has ever been possible in Europe. The constantly increasing recognition and acceptance of psychoanalysis as a method of research by American medicine as well as the recent development of specialized training in psychoanalysis has become more and more manifest.

The revision of the first edition succeeds in bringing this volume up to date. Because its purpose was originally informative rather than technical or controversial and because there have been no recent discoveries refuting the basic principles of

psychoanalysis many chapters have required no alteration but two new chapters have been added: one on the psychological study of organic disease and one on the extra-medical applications of psychoanalysis. The final chapter on professional organizations and education has been rewritten and gives now a complete and impressive picture of the history of psychoanalysis in this country.

This book is not designed for technical instruction in the practice of psychoanalysis. Its purpose is informative and to assist those with an intelligent interest to understand how the analyst himself regards his own work, and everyone who wishes to become informed of the facts and theories of psychoanalysis will benefit from this book and will get a first-hand and clear picture of psychoanalysis as a branch of science.

M.G.

DOLLARD, JOHN, DOOB, LEONARD W., MILLER, NEAL E., MOWRER, O. H. and SEARS, ROBERT L.: *Frustration and Aggression*, Yale University Press, New Haven, Connecticut, 1939, 209 pp. \$2.00.

This cooperative effort by Dollard and his associates has resulted in a work of interest to psychologists, sociologists, and others concerned with human behavior, either of individuals or groups. There are not, however, any directly stated medical implications. A hypothesis that aggression is a consequence of frustration is presented, and clinical examples of aggressive behavior are demonstrated to reinforce the hypothesis and its variations. The authors do not claim to have proved their point by any "experimental" efforts such as many medically-minded persons would desire. Free and intelligent use has been made of the related literature and an excellent bibliography has been developed.

In addition to the chapters on the effect of prior frustrations on individuals or groups of individuals leading to aggressive behavior in the socially unacceptable sense, I would have liked the authors to include a chapter on the socially approved responses to frustrations which they have called sublimations.

P. D. S.

# NOTES AND CORRESPONDENCE

Many of our readers have requested that, when feasible, notices of meetings which are of interest to students of psychosomatic medicine be included in this journal since there is no periodical which gathers together notices of such meetings. In response to this request we may note the following:

On March 31, 1939, the American College of Physicians in New Orleans held a Round Table Conference on "Psychosomatic Disorders" under the chairmanship of Doctor Walter R. Houston.

On May 11, 1939 the American Psychiatric Association in Chicago, at its annual meeting held a Round Table Discussion on "Psychosomatic Relationships" under the chairmanship of Doctor Flanders Dunbar. Excerpts from the secretary's report follow.

In accordance with a motion passed at the last Round Table, the chairman gave a brief historical sketch of the development of the *JOURNAL OF PSYCHOSOMATIC MEDICINE*, since a need for such a publication was discussed at the two previous Round Tables. She suggested for discussion at the present meeting two topics: First, the problem of teaching psychosomatic medicine to students, and second, the relationships of special emotional disturbances to specific somatic disorders. She discussed briefly the term "Psychosomatic Medicine," pointing out some objections to it and requesting opinions regarding its use. In answer to questions she also discussed the possibility of inclusion in *PSYCHOSOMATIC MEDICINE* of a section consisting of informal notes and abstracts from the various clinics for the purpose of a mutual exchange of experiences and ideas. Doctor Dunbar then read such an informal note from the Tavistock Clinic in England in which the problems studied there were enumerated, the formation of a psychosomatic discussion group described, and an increase in interest in this field in Britain reported.

Doctor M. Ralph Kaufman of Boston stated that at Doctor Felix Deutsch's instigation, research on the teaching of psy-

chosomatic medicine was undertaken three years ago in connection with seniors at the Harvard Medical School. An attempt to clarify and organize a technique for teaching this subject was made and the results are soon to be published. This attempt to formulate methods of teaching was made in conjunction with the medical department only, and the department of medicine, especially Doctor Blumgart, has been very cooperative. He described how fourth year medical students, while serving as clinical clerks on the medical ward, were given routine cases which they took up individually and in conference with the psychiatrists. The latter strive to outline the emotional component in diverse disorders as related to the somatic component and to emphasize that this knowledge is needed in order to treat the whole individual satisfactorily. An attempt is made also to show the genetic and developmental aspects of the total life situation and the relation of the present conflict to previous experiences. Dr. Kaufman emphasized that it is important to prove and not to sell psychosomatic medicine to the staff of internal medicine. He stressed the need of teaching psychosomatic medicine to students before they come to the clinical part of their schooling, namely, in the pre-clinical years. He stated that at the end of ten or fifteen conferences the student is able to re-arrange his concepts in the psychosomatic field so that he understands it quite satisfactorily. In addition to the above teaching procedure, an organized psychiatric discussion group, primarily among first and second year students, has been started in order to stimulate interest in the psychic factors in physiological processes.

Doctor Felix Deutsch supplemented Doctor Kaufman's report by describing the three developmental steps leading to their present teaching procedure. At first, he stated, the cases were discussed in large meetings where, in spite of the psychiatrists' feeling of satisfaction, the students

understood little of the discussion. Later, cases presented by the resident were discussed by the social worker, the psychiatrist, and the other physicians involved, with a final re-assembling of the various factors by Doctor Deutsch. This proved unsuccessful because this procedure was too time-consuming. According to the method used at present, the student takes the case history, discusses it with the psychiatrist, and then goes back to the patient to compare his findings with those of the psychiatrist, and finally presents the case before the class. The students still complain that it takes much of their time; consequently, not all students are chosen for this procedure.

*Doctor S. Spafford Ackerly* of Louisville described the teaching of psychosomatic relationships in his department. In the Out-Patient Clinic, which is called the Correlation Clinic, groups of six students are taken for two weeks each. Two students are assigned to each physician and are given two cases each. Each patient must agree to return for at least ten visits. During the first four visits, the student and the instructor are present at the interview, with the student directing and the instructor criticizing after the patient has left. During the other six visits, the patient is interviewed by the student alone. At the end the patient is presented at conference. Of the patients seen in that clinic, sixty-two per cent have some real somatic disease. Between sixty and seventy per cent of the patients (300 patients seen annually) show a definite improvement at the end of this series of interviews, apparently because of catharsis and attention. This program has been in effect for the past five years. Doctor Ackerly also emphasized how difficult correlation often is in view of the medical "compartmentalization."

*Doctor Oliver Spurgeon English* of Philadelphia described briefly the teaching of psychosomatic relationships at Temple University. He said that a group of clinics is given by the psychiatrist to the fourth year men as a part of their regular course in internal medicine. Ward cases are used and the psychosomatic relationships are brought out in cooperation with the pro-

fessor of medicine. Doctor English stated that he was not too optimistic regarding accomplishment and therefore not disappointed in the results. He believes that the students are given some understanding of the dynamics; that they develop some hesitancy in continuing treatment solely on a somatic basis in some chronic ailments; and that they approach the orientation that while no miracles can be performed, often management of behavior rather than the removal of specific symptoms will aid the patient.

*Doctor L. M. Rogers* of the Public Health Service agreed with Doctor Kaufman that the early teaching of bio-physiology in the light of psychosomatic relationships is necessary. He felt that medical students are often too organically oriented. He thought that recognition of disease as a dynamic process and not only as a direct outcome of specific causes is necessary for the understanding of psychosomatic relationships.

*Doctor Dunbar* then mentioned the two difficulties she often found confronting workers in the psychosomatic field, namely, excessive organic orientation and the use of therapeutic criteria in judging the existence of psychosomatic relationships, both of which have their origin in the separation of psyche and soma.

*Doctor Herbert S. Ripley* of New York City felt that the teaching of psychosomatic relationships in the New York Hospital was somewhat easier because of special arrangement and also because more teaching hours are devoted to psychiatry. He felt that the need for psychiatric consultation is being recognized increasingly, especially by the younger men. Twenty-one per cent of the male patients and twenty per cent of the female patients on the medical service are referred to the psychiatrist for consultation. As part of the teaching program, medical cases are if necessary discussed with the student group by the psychiatrist who also discusses the cases of the student clerks on the medical service with them. In addition, there are weekly conferences when the students present cases and the psychiatrist discusses them before the group. Doctor Ripley emphasized post-graduate teaching, especially for interns



and residents with whom the psychiatrist reviews cases and with whom he follows patients from the diagnostic and therapeutic point of view. The internist is given the chief responsibility for the handling of the cases but in some instances a transfer to the psychiatric service is arranged. In the New York Hospital a psychiatrist is especially assigned as consultant of the medical service.

*Doctor Roy R. Grinker* of Chicago said that the teaching of psychosomatic medicine will fail if given in psychiatric terms without adhering to general basic principles. He would begin with the teaching of general energy problems, then a discussion of the dynamics involved in the nervous system associating this with the evolution of structure and correlated change of function. He would emphasize that energy acting is always the same but that it produces different results when acting on different levels. He would also emphasize that disease in psychiatry follows the same course as somatic disease but on a higher level. He reiterated the necessity of teaching the principle of a single energy and its vicissitudes under different conditions and that psychosomatic medicine is not detached from the rest of medical teaching. He felt that details were not important—that principles were. Details should be taught later to especially interested students.

*Doctor Boris B. Rubenstein* of Cleveland also was convinced that there was no difference between the psyche and the soma except in the angle of approach. He discussed briefly the problems of studying ovarian function both from the psychiatric and somatic aspects. Later he added that in any psychosomatic research the two aspects of the problem must measure the same function, preferably at the same time in order to be scientifically valid.

*Doctor M. M. Fröhlich* of Ann Arbor described briefly the teaching of psychiatry at the University of Michigan and especially the attempts at teaching psychosomatic medicine. He stated that requests for consultation from other hospital departments are increasing in number to such an extent that it is difficult to take care of them. Of the 2,000 patients seen annually

in the psychiatric Out-Patient Clinic, two-thirds are referred by other departments. Psychosomatic relationships are quite well recognized by the general hospital staff and the attitude to the psychiatric aspects of the patients' difficulties is improving. A tendency to use therapeutic criteria and to expect more actual handling and aid from the psychiatrist than is feasible as well as a lack of understanding of psychiatric problems is, however, still often encountered.

*Doctor Leon J. Saul* of Chicago suggested that an occasional article in the journal of PSYCHOSOMATIC MEDICINE elucidating the problems discussed here from an historical point of view might be worth while. He asked whether or not the Journal would provide a forum for exchange of ideas in connection with psychosomatic medicine and so provide more or less a continuation of this Round Table section in its pages.

*Doctor Dunbar* quoted from the Journal's Editorial Introduction as follows: "The main purpose of this journal is to serve as a forum for workers in a field which has become vital in current medical research and therapy." She added that she would discuss the matter further with the Board of Editors.

*Doctor Galbraith* of Maine stated that the recognition of psychosomatic problems is spreading to the general and country practitioners whose awareness of them is increasing.

*Doctor Felix Deutsch* added that the teaching of psychosomatic medicine is difficult, not because we do not know the problems involved but because previous teachings have to be combatted. He felt that we must formulate what we mean by psychosomatic medicine and suggested the definition that it is a system of knowledge regarding organic processes associated with emotional processes so as to form a unified process. He reaffirmed Dr. Saul's wish that PSYCHOSOMATIC MEDICINE might serve as a forum for the discussion of problems in teaching psychosomatic medicine.

*Doctor Kaufman* remarked that the present Round Table discussion was really on teaching. He expressed the wish that another Round Table discussion might be organized later devoted to the subject of

teaching of psychosomatic medicine. He felt that clarification of ideas on teaching is now perhaps the most important aspect of the subject and suggested that Doctor Dunbar call such a Round Table meeting sometime next fall.

Doctor Dunbar closed the Round Table discussion.

M. M. FRÖHLICH

From December 27, 1939 to December 30, 1939, the Section on Psychology of the American Association for the Advancement of Science in Columbus, Ohio, presented fifty special papers many of which are of possible interest from the point of view of psychosomatic medicine.

The outstanding event of the session was a symposium on "The Internal Environment and Behavior." The symposium was organized and directed by *Doctor Ross A. McFarland*, of the Fatigue Laboratory of Harvard University. Doctor McFarland is in charge of the national program for research on aviation and high altitudes. He discussed "Oxygen and Behavior."

*Doctor Ernst Gellhorn*, of the Medical School of the University of Chicago, discussed a wide range of significant experiments on blood sugar in relation to human reactions.

*Doctor Edward F. Adolph*, of the Medical School of the University of Rochester,

described the significant experiments on human and animal subjects in relation to "Water Balance." Doctor Adolph's experiments were partly based on his own investigations in the desert.

*Doctor Curt P. Richter*, of the Johns Hopkins Medical School, discussed his ingenious experiments on the behavior of animals in relation to the internal secretions. The whole symposium indeed might be considered as a vote of confidence in Claude Bernard's famous dictum, "The constancy of the *milieu intérieur* is the condition of a free life."

The annual dinner of the Section was held jointly with the Section on Education. *Doctor Dashiell*, of the University of North Carolina, and *Doctor George D. Stoddard*, Dean of the Graduate School of the University of Iowa, spoke. *Doctor Dashiell's* paper dealt with the impossibility of "set" or "determining tendency" in psychology. *Doctor Stoddard* discussed the Iowa experiments which demonstrated that the intelligence quotient changes in certain educational situations.

LEONARD CARMICHAEL

Societies and Readers of this Journal who have been interested in meetings focused on the problems covered by PSYCHOSOMATIC MEDICINE are invited to submit announcements, preferably with program or abstract of proceedings. These will be judged on their merits and presented in whole or in part as the paging of the JOURNAL permits.

## BOOKS RECEIVED

BODANSKY, MEYER and BODANSKY, OSCAR: *Biochemistry of Disease*, The Macmillan Company, New York, 1940.

BORTZ, EDWARD L.: *Diabetes, Practical Suggestions for Doctor and Patient*, F. A. Davis Company, Philadelphia, 1940.

KENDIG, ISABELLE and RICHMOND, WINIFRED V.: *Psychological Studies in Dementia Praecox*, Psy-

chological Department, St. Elizabeth's Hospital, Washington, D. C., Edwards Brothers, Inc., Ann Arbor, Michigan, 1940.

*The Hypothalamus and Central Levels of Autonomic Function*, Proceedings of the Association for Research in Nervous and Mental Disease, Volume XX, Williams and Wilkins Company, Baltimore, 1940.

## ERRATUM

Volume I, No. 4, 1939, p. 550, George E. Daniels, Evaluation of Psychic Factors in Diabetes Melli-

tus, first column, 12th line from bottom—date should be 1930 instead of 1931.